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Rockfish Sampling Cruise: F/V *OCEAN SELECTOR*, July 12 to 30, 1989

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F/V OCEAN SELECTOR, JULY 12 TO 30, 1989

by

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ABSTRACT

Gillespie, G. E. and B. M. Leaman. 1990. Rockfish sampling cruise: F/V OCEAN SELECTOR, July 12 to 30, 1989. Can. MS Rep. Fish. Aquat. Sci. 2061: 89 p.

Preliminary results from a research cruise to collect biological samples of commercially important rockfishes in British Columbia waters are presented. Decreased trip limits in the commercial fishery have limited opportunities to obtain discrete samples from individual management areas. This cruise was designed to provide the population data for rockfishes, primarily Pacific ocean perch (Sebastes alutus).

A total of 6,775 Pacific ocean perch and 1,082 other rockfish were sampled from traditional fishing grounds off the west coasts of the Queen Charlotte Islands and Vancouver Island, and in Queen Charlotte Sound.

RÉSUMÉ

Gillespie, G. E. and B. M. Leaman. 1990. Rockfish sampling cruise: F/V OCEAN SELECTOR, July 12 to 30, 1989. Can. MS Rep. Fish. Aquat. Sci. 2061: 89 p.

Les résultats préliminaires d'une croisière de recherche ayant pour but de faire des prélèvements biologiques des rascasses ayant une importance commerciale dans les eaux de la Colombie-Britannique sont présentés. La réduction des limites de prises par sortie dans la pêcherie commerciale a restreint les occasions d'obtenir des échantillons discrets de chacun des secteurs d'exploitation. Cette croisière visait à réunir des données sur les populations de rascasses, et surtout sur la sébaste du Pacifique (Sebastes alutus).

On a échantillonné 6 775 sébastes du Pacifique et 1 082 autres rascasses dans les champs de pêche traditionnels au large de la côte ouest des Iles de la Reine-Charlotte et de l'île Vancouver, ainsi que dans le détroit de la Reine-Charlotte.

INTRODUCTION

The Pacific Region Groundfish Management Plan (Anon. 1989) attempts to balance the competing needs of stock conservation and economic return for the B.C. groundfish industry. One of the goals of the Plan is to have the fishery occupy as much of the year as possible. The mechanisms chosen to accomplish this are individual vessel trip limits and quarterly quotas, scaled to vessel size, time of year and species. In general, the Plan has helped to prevent large overruns in quotas but it has also restricted sampling opportunities, as trip limits are reduced in parts of the year. These lower limits (2-25 t) mean that vessels must combine many such limits, by species and areas, to provide landings similar in total quantity to those prior to reduction (100-150 t). Combination of small catches from different species and areas in vessel tanks or holds means that discrete samples from management units become increasingly more difficult to obtain. Since one explicit management goal is to extend the fishery for as long as possible throughout the year, the mechanisms of management act to decrease the availability of information upon which to base that management. This is an inevitable result of complex stock structures, variable productivity levels, and management goals. An alternative would be to have open fisheries until quotas are fully subscribed. However, there would be obvious biases associated with particular vessel classes and times of year.

To overcome this difficulty, the Offshore Rockfish Program has initiated a series of synoptic sampling cruises, to obtain biological samples from shelf and slope rockfish stocks. Timing of the cruises depends on sampling goals, but for population data we attempt to sample when males and females are in approximately equal sex ratio on the fishing grounds (June-August). Samples taken at other times of year are subject to bias as a result of seasonal differences in availability and movement of the sexes (Leaman 1985).

This report presents some results of the slope rockfish sampling cruise conducted in July, 1989. Age-specific results will be contained in future reports.

MATERIALS AND METHODS

Vessel and gear

Samples were collected aboard the F/V OCEAN SELECTOR, a 47.9 m Canadian commercial stern trawler equipped for both bottom

and midwater fishing (Appendix Table 1, Appendix Figs. 1 and 2).

Sampling methods

Sampling stations were selected by the vessel master, based on his knowledge of the area, for designated survey areas between Dixon Entrance and southwest Vancouver Island (Figs. 1-3). We attempted to obtain two samples for each 37 m (20 fath) depth interval, between 183-327 m (100-179 fath). Achievement of this sampling goal was constrained by the steep bathymetry of many areas, and time.

Methods for determining species compositions follow those of Nagtegaal et al. (1986). Estimates of catch weight were provided by the vessel master. The catch was subsampled for species composition from the conveyor, and the proportions derived were applied to the estimate of weight of total catch for the haul. Catch weights were recorded in pounds and later converted to kilograms. Catch estimates were checked against known landing weights.

Biological samples for major species consisted of 100 specimens for which length/sex/maturity/double otoliths (L/S/M/O) were obtained. Another 100 L/S/M were obtained for each additional sample in a depth interval. Fork lengths were measured to the nearest cm. Forty-eight pairs of *Sebastes alutus* gills from shallow and deep tows at each locality were also obtained. These gills were preserved for subsequent examination of the copepod parasite *Neobrachiella robusta*, which has been used for stock identification in *S. alutus* (Leaman and Kabata 1987). A random sample of 20 *S. alutus* from the west coast of the Queen Charlotte Islands was also obtained and frozen for taxonomic analysis.

Samples of *S. flavidus* from Goose Island Gully and off Nootka Sound were frozen for subsequent whole-body parasite screening (Lee et al., in prep.). These samples will be used to determine if a parasite, suitable for use as a natural tag in stock identification, can be found.

RESULTS AND DISCUSSION

Catch

Thirty-eight bottom tows and two midwater tows were completed during the charter (Table 1, Figs. 1-3). S. alutus accounted for 61.2% of the total catch (Table 2). S. reedi, S. entomelas and S. flavidus were also caught in large quantities. The latter two were caught mainly in the two midwater tows; haul 17 off Nootka, and haul 40 in Goose Island Gully (Appendix Table 2, Figs. 1 and 2). Arrowtooth flounder (Atheresthes stomias) and sablefish (Anoplopoma fimbria) were the only non-rockfish species caught in quantity.

Rockfish species composition

S. alutus was consistently the major species of the rockfish catch by bottom trawl, between 183 and 327 m (Table 3, Figs. 4-11). The three cases in which it was not the primary species were: a tow in deep water (328-364 m) off Langara Spit (Fig. 4), where S. aleutianus was the major species caught; a tow in the 219-254 m interval off Langara Spit, where S. zacentrus predominated; and a tow in the 219-254 m interval off Rennell Sound (Fig.5), where S. reedi and S. proriger had higher catch rates.

S. brevispinis, S. entomelas, S. flavidus and S. proriger usually exhibited highest catch rates in the shallowest depth stratum fished, and a general trend of decreased catch rate with depth in all areas. S. reedi, S. proriger and S. zacentrus generally showed decreased catch rates with depth off the west coasts of the Queen Charlotte and Vancouver islands (Figs. 4-6, 10 and 11). S. diploproa and S. crameri catch rates increased with depth off the west coast of Vancouver Island (Figs. 10 and 11) and in Moresby and Mitchell's gullies (Figs. 7 and 8), but were not caught in quantity in the Goose Island Gully (Fig. 9) or off the west coast of the Queen Charlotte Islands (Figs 4-6). S. aleutianus, S. borealis, and Sebastolobus alascanus all exhibited a general trend of increased catch rate with depth, the former two usually showing maximum catch rates at the deepest intervals sampled. Depths below 273 m were not fished off the west coast of Vancouver Island, so the importance of S. aleutianus and S. borealis could not be assessed. A previous survey of the area encountered small amounts of these species, but only in quantity at depths below 330 m (Leaman et al. 1988).

The two midwater tow catches were primarily S. entomelas (72% of the catch off Nootka, 54% in Goose Island Gully) and S. flavidus. The Goose Island Gully catch also contained small proportions of S. paucispinis and S. pinniger.

Biological Samples

A total of 7,857 rockfish were sampled for length and sex, and 3,728 of these were assigned gonad maturity stages and had otoliths collected (Table 4). Seventeen samples of 48 pairs of gills were taken from Pacific ocean perch to document the incidence and prevalence of the copepod parasite *Neobrachiella robusta* (Table 5). Twenty whole *S. alutus* were frozen to measure morphometric differences between two body forms observed off the west coast of the Queen Charlotte Islands. Two samples of twenty *S. flavidus* were taken for whole-body parasite assay. The results from these collections will be presented elsewhere.

Length frequency data from these samples are generally unremarkable. Due to the determinate growth pattern of rockfishes many age-classes may be represented in each length class, particularly at ages above 25 years (Archibald et al. 1981). There were no instances of large proportions of very small fish in any of the samples, and thus no evidence of recruitment of strong year-classes in the 1983-1986 period.

Sex ratio for *S. alutus* was nearly equal for most of the stocks (Table 6).

Proportions of the samples at different reproductive development stages were fairly constant throughout the areas, with the exception that there were greater proportions of immature fish recorded from Moresby and Goose Island gullies, and southwest Vancouver Island (Table 7).

Off the west coast of the Queen Charlotte Islands the majority of female *S. alutus* sampled were in the small maturing stage, and most of the males were also maturing. All three areas (Langara, Rennell Sound and Anthony Island) had very few (<3%) immature fish in the samples.

Proportions of immature *S. alutus* in Moresby Gully were 10.2% for females and 9.0% for males. Proportions of immatures in Mitchell's Gully were 5.4% for females and 6.7% for males. In Goose Island Gully, proportions of immatures were extremely high at 44.2% for females and 37.0% for males. The majority of the adult females were in the maturing and resting stages (stages 2, 3 and 7) and the adult males were predominantly maturing (stage 2). The higher proportions of immature fish are correlated with a greater number of small fish (<35 cm) in the length frequency samples from these areas.

Off the west coast of Vancouver Island, the bulk of the fish sampled for both sexes were in the maturing stages. Percentage of immature fish sampled was highest off southwest Vancouver Island (8.9% for females and 17.5% for males) and lowest off Nootka (1.9% for females and 4.3% for males).

L/S/M/O and L/S/M samples were taken for S. entomelas (Table 8), S. flavidus (Table 9), S. aleutianus (Table 10), S. reedi (Table 11) and S. brevispinis (Table 12) when these species were caught in sufficient quantities. A L/S/O sample of Pacific hake, Merluccius productus, was taken from haul 40 (Table 13).

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Table 1. Haul numbers and total effort by area and gear, F/V OCEAN SELECTOR, July 12 to 30, 1989. All hauls are bottom trawl, unless designated as midwater trawl (MW).

Locality	Haul #	Effort (hr)
Moresby Gully	1-8, 34-36	16.46
Mitchell's Gully	9-11	7.68
Quatsino	12-15	7.72
Nootka	16	1.00
Nootka (MW)	17	1.67
Southwest Vancouver Island	18-22	10.50
Langara	23-27	9.75
Rennell Sound	28-31	10.95
Anthony Island	32-33	2.77
Goose Island Gully	37-39	6.90
Goose Island Gully (MW)	40	3.17
Totals	40	78.57

Table 2. Catch weights and percent of total catch by species, F/V OCEAN SELECTOR, July 12 to 30, 1989. Other species includes all those which represented less than 1% of the total catch. See Table 14 for common names of species.

Species	Weight (kg)	Percent of total
Sebastes alutus	165,621	61.2
S. reedi	16,404	6.1
S. entomelas	16,296	6.0
S. flavidus	11,492	4.2
S. aleutianus	8,414	3.1
S. zacentrus	7,345	2.7
S. diploproa	6,344	2.3
S. brevispinis	5,592	2.1
Atheresthes stomias	5,118	1.9
S. proriger	4,639	1.7
Anoplopoma fimbria	4,617	1.7
Sebastolobus alascanus	4,209	1.6
Other species	14,608	5.4
Total catch	270,966	100.0

Table 3. Mean rockfish catch rates (kg/hr) by area and depth stratum, F/V OCEAN SELECTOR, July 12 to 30, 1989. Means are calculated as averages of catch rates between tows within an area and depth stratum. Midwater tows are presented separately (MW).

Area	Langara			
Depth (m)	219-254	255-273	274-327	328-364
S. aleutianus	0	11.38	130.96	7115.05
S. alutus	554.78	2436.84	1827.87	1746.05
S. babcocki	0	34.25	14.78	0
S. borealis	0	0	276.05	0
S. brevispinis	110.23	29.68	0	0
S. crameri	0	0	14.78	0
S. diploproa	0	0	0	0
S. elongatus	0	0	0	0
S. entomelas	0	3.88	0	0
S. flavidus	0	0	0	0
S. helvomaculatus	0	0	14.78	0
S. paucispinis	0	0	0	0
S. pinniger	0	0	0	0
S. proriger	0	3.88	0	0
S. reedi	4.41	11.38	0	0
S. variegatus	79.14	0	0	0
S. zacentrus	652.96	253.49	210.60	0
Sebastolobus alascanus	21.87	32.68	109.14	79.05
No. of Tows	1	2	1	1

Table 3 (cont'd)

Area	Rennell Sound			Anthony Island	
Depth (m)	219-254	255-273	274-327	255-273	274-327
S. aleutianus	0	18.77	85.82	0	95.68
S. alutus	415.65	1589.13	4208.15	4825.76	1553.18
S. babcocki	0	2.92	28.76	66.91	71.93
S. borealis	0	18.77	0	0	23.80
S. brevispinis	185.00	58.52	0	84.05	11.93
S. crameri	0	0	0	0	0
S. diploproa	0	0	0	0	0
S. elongatus	0	0	0	0	0
S. entomelas	138.77	0	0	17.19	0
S. flavidus	0	0	0	0	0
S. helvomaculatus	46.29	27.01	0	17.19	23.80
S. paucispinis	0	14.60	0	0	0
S. pinniger	0	0	0	0	0
S. proriger	1501.15	17.65	0	133.76	18.17
S. reedi	5634.00	140.53	0	133.76	0
S. variegatus	0	0	0	0	0
S. zacentrus	0	0	0	352.34	48.17
Sebastolobus alascanus	23.17	20.53	185.57	100.34	101.93
No. of Tows	1	2	1	1	1

Table 3 (cont'd)

Area	Moresby Gully				
Depth (m)	183-218	219-254	255-273	274-327	328-364
S. aleutianus	0	0	7.30	0	286.38
S. alutus	2796.80	2177.24	1048.78	14681.71	2272.46
S. babcocki	15.05	14.53	53.56	92.02	179.29
S. borealis	0	0	0	123.07	366.89
S. brevispinis	1353.80	714.83	3.61	2.53	0
S. crameri	0	0	0	8.55	18.28
S. diploproa	0	0	76.55	29.22	0
S. elongatus	0	0	0	0	0
S. entomelas	59.30	0	0	0	0
S. flavidus	342.05	0	0	0	0
S. helvomaculatus	0	0	1.30	0	0
S. paucispinis	0	26.30	0	142.25	0
S. pinniger	119.30	0	0	0	0
S. proriger	0	0	0	0	0
S. reedi	0	21.92	1.94	157.82	0
S. variegatus	0	0	0	0	0
S. zacentrus	0	131.06	3.83	204.56	0
Sebastolobus alascanus	0	40.78	67.70	177.58	277.27
No. of Tows	1	2	3	4	1

Table 3 (cont'd)

Area Depth (m)	Mitchell's Gully 219-254	 255-273
S. aleutianus	0	4.02
S. alutus	1017.32	648.11
S. babcocki	21.41	4.47
S. borealis	0	0
S. brevispinis	17.32	25.98
S. crameri	0	0
S. diploproa	0	53.01
S. elongatus	0	0
S. entomelas	0	0
S. flavidus	8.69	0
S. helvomaculatus	17.32	0
S. paucispinis	0	0
S. pinniger	0	0
S. proriger	0	16.38
S. reedi	21.41	107.43
S. variegatus	0	0
S. zacentrus	0	23.33
Sebastolobus alascanus	43.23	17.50
No. of Tows	1	2

Table 3 (cont'd)

Area Depth (m)	Goose Island Gully 110-145(MW)	146-182	219-254	255-273
S. aleutianus	0	0	0	20.05
S. alutus	0	477.76	1316.81	606.72
S. babcocki	0	135.16	120.86	20.05
S. borealis	0	0	0	5.83
S. brevispinis	0	52.26	42.62	0
S. crameri	0	0	0	0
S. diploproa	0	0	0	0
S. elongatus	0	0	0	0
S. entomelas	3468.37	30.28	0	0
S. flavidus	2869.00	0	0	0
S. helvomaculatus	0	0	0	0
S. paucispinis	36.37	60.51	0	11.61
S. pinniger	0	0	0	0
S. proriger	18.05	5.55	0	0
S. reedi	0	0	0	0
S. variegatus	0	0	0	0
S. zacentrus	0	0	0	0
Sebastolobus alascanus	0	33.03	78.29	22.72
No. of Tows	1	1	1	1

Table 3 (cont'd)

Area	Quatsino		Nootka	
Depth (m)	183-218	219-254	146-182(MW)	255-273
S. aleutianus	0	0	0	0
S. alutus	1311.07	2028.31	0	849.50
S. babcocki	4.05	5.63	0	16.05
S. borealis	0	0	0	0
S. brevispinis	103.14	0	0	0
S. crameri	0	112.99	0	8.05
S. diploproa	0	1363.07	0	409.05
S. elongatus	4.05	0	0	0
S. entomelas	0	0	2292.65	0
S. flavidus	0	0	1159.85	0
S. helvomaculatus	4.05	10.52	0	0
S. paucispinis	64.45	0	0	0
S. pinniger	0	0	0	0
S. proriger	240.89	0	0	0
S. reedi	233.32	0	0	0
S. variegatus	0	0	0	0
S. zacentrus	428.36	45.20	0	8.05
Sebastolobus alascanus	20.94	79.89	0	102.05
No. of Tows	2	2	1	1

Table 3 (cont'd)

Area Depth (m)	Southwest Vancouver Island 183-218	219-254	255-273
S. aleutianus	0	0	0
S. alutus	750.87	548.18	998.05
S. babcocki	9.38	30.63	10.55
S. borealis	0	0	0
S. brevispinis	6.58	0	0
S. crameri	0	0	92.55
S. diploproa	95.63	136.31	389.55
S. elongatus	86.24	11.28	0
S. entomelas	1.31	0	0
S. flavidus	0	0	0
S. helvomaculatus	14.37	13.99	10.55
S. paucispinis	0	0	0
S. pinniger	0	0	0
S. proriger	54.41	0	0
S. reedi	489.84	0	0
S. variegatus	0	0	0
S. zacentrus	66.66	52.70	5.05
Sebastolobus alascanus	32.53	61.21	41.05
No. of Tows	3	1	1

Table 4. Summary of rockfish biological samples taken on the F/V OCEAN SELECTOR, July 12 to 30, 1989. (Sample types: L/S/M = length, sex and maturity stage; L/S/M/O = length, sex, maturity stage and double otoliths; MORPH = whole fish frozen for morphometric analyses; PARASITE = whole fish frozen for parasite assay; RAKER = gill raker parasite sample.)

Species	Area	Sample type	N
Sebastes aleutianus	Langara	L/S/M	99
	Langara	L/S/M/O	100
Total			199
S. alutus	Langara	L/S/M	431
	Langara	L/S/M/O	400
	Langara	RAKER	96
	Rennell Sound	L/S/M	314
	Rennell Sound	L/S/M/O	300
	Rennell Sound	RAKER	96
	Rennell Sound	MORPH	20
	Anthony Island	L/S/M	199
	Anthony Island	L/S/M/O	200
	Anthony Island	RAKER	96
	Moresby Gully	L/S/M	1001
	Moresby Gully	L/S/M/O	900
	Moresby Gully	RAKER	144
	Mitchell's Gully	L/S/M	198
	Mitchell's Gully	L/S/M/O	200
	Mitchell's Gully	RAKER	96
	Goose Island Gully	L/S/M	421
	Goose Island Gully	L/S/M/O	400
	Goose Island Gully	RAKER	96
	Quatsino	L/S/M	431
	Quatsino	L/S/M/O	400
	Quatsino	RAKER	96
	Nootka	L/S/M	132
	Nootka	L/S/M/O	100
	SWVI	L/S/M	428
	SWVI	L/S/M/O	300
	SWVI	RAKER	96
Total			6,775
S. brevispinis	Moresby Gully	L/S/M	116
	Moresby Gully	L/S/M/O	100
Total			216

Table 4 (cont'd)

Species	Area	Sample type	N
S. entomelas	Goose Island Gully	L/S/M/O	10
	Nootka	L/S/M/O	18
Total			28
S. flavidus	Goose Island Gully	L/S/M	100
	Goose Island Gully	L/S/M/O	100
	Goose Island Gully	PARASITE	20
	Nootka	L/S/M	105
	Nootka	L/S/M/O	100
	Nootka	PARASITE	20
Total			445
S. reedi	Rennell Sound	L/S/M	94
	Rennell Sound	L/S/M/O	100
Total			194
Grand Total All Rockfish			7,857

Table 5. Summary of sample data for gill raker collections from Pacific ocean perch, S. alutus, F/V OCEAN SELECTOR, July 12 to 30, 1989. Depths presented are the modal depth for the tow (Appendix Table 2).

Haul	Area	Depth (m)	N
1	Moresby Gully	275	48
3	Moresby Gully	320	48
4	Moresby Gully	338	48
9	Mitchell's Gully	245	48
10	Mitchell's Gully	260	48
12	Quatsino	210	48
13	Quatsino	247	48
18	Southwest Vancouver Island	283	48
19	Southwest Vancouver Island	229	48
24	Langara	262	48
25	Langara	238	48
28	Rennell Sound	223	48
30	Rennell Sound	309	48
32	Anthony Island	256	48
33	Anthony Island	320	48
37	Goose Island Gully	165	48
39	Goose Island Gully	274	48
Total			816

Table 6. Summary of length frequency and maturity of *Sebastes alutus* collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for maturity code descriptions.

Stock			Langara			
Date (DDMMYY)	260789		260789		260789	
Depth (m)	262		238		256	
Set	24		25		26	
	M	F	M	F	M	F
Length (cm)						
17	-	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	-	-	-	-	-	-
21	-	-	-	-	-	-
22	-	-	-	-	-	-
23	-	-	-	-	-	-
24	-	-	-	-	-	-
25	-	-	-	-	-	-
26	1	-	1	-	-	-
27	0	-	0	-	-	-
28	0	-	0	-	-	-
29	0	-	0	-	1	-
30	0	-	1	-	0	-
31	0	-	0	1	1	-
32	0	1	1	1	2	2
33	2	2	4	1	4	1
34	12	3	9	3	5	8
35	12	12	15	10	23	11
36	17	14	11	14	25	19
37	20	16	22	13	16	14
38	19	11	20	16	16	11
39	8	14	9	17	10	18
40	6	9	6	8	4	11
41	3	16	0	6	-	6
42	1	2	1	1	-	1
43	1	4	-	2	-	0
44	-	2	-	4	-	2
45	-	1	-	2	-	1
46	-	1	-	1	-	-
47	-	-	-	-	-	-
48	-	-	-	-	-	-
49	-	-	-	-	-	-
50	-	-	-	-	-	-
51	-	-	-	-	-	-
Total	102	108	100	100	107	105
Maturities						
1	1	0	2	0	1	0
2	49	46	46	50	44	55
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	1	3	0	2	0	0
9	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Langara		Total for Langara	
Date (DDMMYY)	260789			
Depth (m)	311			
Set	27			
	M	F	M	F
Length (cm)				
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-
21	-	-	-	-
22	-	-	-	-
23	-	-	-	-
24	-	-	-	-
25	-	-	-	-
26	1	-	3	-
27	0	-	0	-
28	1	-	1	-
29	0	1	1	1
30	1	0	2	0
31	2	2	3	3
32	3	1	6	5
33	6	3	16	7
34	10	4	36	18
35	19	12	69	45
36	7	10	60	57
37	17	17	75	60
38	9	15	64	53
39	9	23	36	72
40	2	12	18	40
41	2	10	5	38
42	2	5	4	9
43	-	2	1	8
44	-	0	-	8
45	-	1	-	5
46	-	-	-	2
47	-	-	-	-
48	-	-	-	-
49	-	-	-	-
50	-	-	-	-
51	-	-	-	-
Total	91	118	400	431
Maturities				
1	1	0	5	0
2	41	58	180	209
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	1	5
9	0	0	0	0

Table 6 (cont'd)

Stock	Rennell Sound						Total for Rennell Sound	
Date (DDMMYY)	270789		270789		270789			
Depth (m)	223		278		309			
Set	28		29		30			
	M	F	M	F	M	F	M	F
Length (cm)								
16	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-
30	-	-	-	1	-	1	-	2
31	-	-	-	0	-	0	-	0
32	-	1	1	0	-	0	1	1
33	-	0	0	0	-	0	0	0
34	-	1	0	2	-	0	0	3
35	4	0	1	0	1	3	6	3
36	4	2	3	1	6	1	13	4
37	6	6	10	3	11	4	27	13
38	8	8	9	6	6	7	23	21
39	16	5	31	12	13	10	60	27
40	20	12	9	9	6	15	35	36
41	12	25	7	18	7	15	26	58
42	4	16	3	19	5	14	12	49
43	3	9	0	11	1	25	4	45
44	1	8	0	8	-	13	1	29
45	0	6	0	8	-	14	0	28
46	1	9	0	13	-	7	1	29
47	-	11	0	9	-	10	0	30
48	-	4	0	5	-	4	0	13
49	-	4	1	1	-	1	1	6
50	-	0	-	-	-	-	-	0
51	-	1	-	-	-	-	-	1
Total	79	128	75	126	56	144	210	398
Maturities								
1	0	0	0	1	0	1	0	2
2	39	56	37	57	26	73	102	186
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	5	0	5	0	0	0	10
9	0	0	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Anthony Island				Total for Anthony Island	
Date (DDMMYY)	280789		280789			
Depth (m)	142		220			
Set	32		33			
	M	F	M	F	M	F
Length (cm)						
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	-	-	-	-	-	-
21	-	-	-	-	-	-
22	-	-	-	-	-	-
23	-	-	-	-	-	-
24	-	-	-	-	-	-
25	-	-	-	-	-	-
26	-	-	-	-	-	-
27	-	-	-	-	-	-
28	-	-	-	-	-	-
29	-	-	-	-	-	-
30	-	-	-	1	-	1
31	-	-	-	1	-	1
32	1	-	-	0	1	0
33	0	1	1	0	1	1
34	0	0	0	1	0	1
35	2	2	5	3	7	5
36	2	4	10	2	12	6
37	5	5	10	8	15	13
38	11	5	6	8	17	13
39	10	9	8	8	18	17
40	10	13	18	16	28	29
41	6	18	13	5	19	23
42	8	19	16	15	24	34
43	8	16	5	10	13	26
44	4	16	3	13	7	29
45	-	13	-	5	-	18
46	-	6	-	6	-	12
47	-	1	-	1	-	2
48	-	4	-	0	-	4
49	-	1	-	1	-	2
50	-	-	-	-	-	-
51	-	-	-	-	-	-
Total	67	133	95	104	162	237
Maturities						
1	2	0	0	0	2	0
2	27	70	54	41	81	111
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	1	0	5	0	6
9	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Moresby Gully							
Date (DDMMYY)	140789		140789		140789		140789	
Depth (m)	275		302		320		338	
Set	1		2		3		4	
	M	F	M	F	M	F	M	F
Length (cm)								
17	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
26	-	1	-	-	-	-	-	-
27	-	0	-	-	-	-	-	-
28	-	0	-	-	-	-	-	-
29	-	0	-	-	-	-	-	-
30	-	0	-	-	-	-	-	-
31	-	0	-	-	-	-	-	-
32	-	0	-	1	-	-	1	-
33	1	0	1	1	-	1	0	-
34	1	1	3	1	4	1	0	-
35	2	7	12	2	5	4	1	-
36	14	1	7	7	11	5	3	-
37	16	4	22	20	9	8	7	2
38	24	12	9	13	14	14	7	1
39	20	8	12	18	16	20	26	7
40	9	19	10	23	18	21	43	4
41	15	11	4	16	7	19	47	12
42	8	4	1	1	0	12	35	2
43	0	3	2	0	4	7	10	5
44	1	6	-	1	1	3	2	2
45	2	5	-	5	-	6	1	0
46	-	4	-	4	-	8	-	5
47	-	1	-	4	-	7	-	2
48	-	1	-	2	-	0	-	-
49	-	-	-	-	-	1	-	-
50	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-
Total	113	88	83	119	89	137	183	42
Maturities								
1	2	3	1	3	1	0	0	0
2	79	1	38	0	36	0	78	0
3	0	42	0	52	0	49	0	18
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	15	0	6	0	14	0	4
9	0	0	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Moresby Gully					
Date (DDMMYY)	140789		150789		150789	
Depth (m)	265		294		274	
Set	5		6		7	
	M	F	M	F	M	F
Length (cm)						
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	-	-	1	-	-	-
21	-	-	0	-	-	-
22	2	-	0	-	-	-
23	1	-	0	-	-	-
24	0	1	0	-	-	-
25	0	0	0	-	2	-
26	1	0	0	-	6	2
27	0	0	0	-	2	2
28	0	1	0	-	3	0
29	0	0	0	-	5	4
30	1	2	0	1	8	3
31	1	7	2	1	4	5
32	4	4	2	0	5	4
33	5	2	4	0	5	2
34	3	1	1	2	7	9
35	7	4	2	3	6	6
36	14	10	11	3	10	7
37	18	5	13	4	7	8
38	17	11	15	13	10	6
39	8	16	4	9	10	7
40	5	20	14	4	10	7
41	8	10	23	8	6	5
42	7	10	21	3	5	4
43	6	4	13	9	3	1
44	0	4	1	5	4	3
45	0	2	-	5	1	1
46	1	2	-	3	0	0
47	-	2	-	3	0	0
48	-	0	-	-	0	1
49	-	1	-	-	1	-
50	-	-	-	-	-	-
51	-	-	-	-	-	-
Total	109	119	127	76	120	87
Maturities						
1	5	7	2	1	19	7
2	35	0	52	12	44	0
3	0	43	14	0	0	20
4	0	0	0	0	1	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	10	0	19	1	8
9	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Moresby Gully				Total for Moresby Gully	
Date (DDMMYY)	280789		280789			
Depth (m)	219		282			
Set	34		36			
	M	F	M	F	M	F
Length (cm)						
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	-	-	-	-	1	-
21	-	-	-	-	0	-
22	1	1	-	-	3	1
23	0	1	-	-	1	1
24	2	2	-	-	2	3
25	0	4	-	-	2	4
26	3	1	-	-	10	4
27	1	0	1	1	4	3
28	4	0	1	0	8	1
29	3	1	0	2	8	7
30	2	4	0	3	11	13
31	2	4	7	2	16	19
32	3	7	2	5	17	21
33	9	8	4	8	29	22
34	6	6	4	4	29	25
35	0	6	5	3	40	35
36	6	5	5	3	81	41
37	10	6	7	12	109	69
38	11	4	15	12	122	86
39	9	8	11	3	116	96
40	6	12	12	11	127	121
41	2	13	9	8	121	102
42	2	14	8	6	87	56
43	0	7	7	2	45	38
44	1	3	6	1	16	28
45	-	4	2	2	6	30
46	-	1	4	1	5	28
47	-	1	1	1	1	21
48	-	-	-	1	0	5
49	-	-	-	-	1	2
50	-	-	-	-	-	-
51	-	-	-	-	-	-
Total	83	123	111	91	1018	882
Maturities						
1	8	8	6	17	44	46
2	31	47	38	30	431	90
3	0	0	0	0	14	224
4	0	0	0	0	1	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	6	0	9	1	91
9	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Mitchell's Gully						Total for Mitchell's Gully	
Date (DDMMYY)	160789		160789		160789			
Depth (m)	245		260		267			
Set	9		10		11			
	M	F	M	F	M	F	M	F
Length (cm)								
16	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-
22	-	-	-	-	1	1	1	1
23	-	-	-	-	1	1	1	1
24	-	-	-	-	1	1	1	1
25	-	-	-	-	0	1	0	1
26	-	-	-	-	1	4	1	4
27	-	1	-	-	4	2	4	3
28	1	0	-	-	1	3	2	3
29	0	0	-	-	1	0	1	0
30	1	0	-	-	0	2	1	2
31	1	2	2	1	3	1	6	4
32	2	1	0	0	2	4	4	5
33	2	0	1	0	8	3	11	3
34	3	3	5	1	7	4	15	8
35	4	3	3	5	7	2	14	10
36	9	8	7	5	8	6	24	19
37	14	3	8	5	11	6	33	14
38	15	11	17	4	14	3	46	18
39	11	16	16	10	12	7	39	33
40	7	8	6	15	8	13	21	36
41	4	10	9	14	4	7	17	31
42	5	8	11	8	1	11	17	27
43	2	7	2	8	3	2	7	17
44	3	9	2	9	-	8	5	26
45	1	9	-	10	-	5	1	24
46	1	10	-	5	-	3	1	18
47	-	5	-	7	-	2	-	14
48	-	1	-	1	-	1	-	3
49	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-
Total	86	115	89	108	98	103	273	326
Maturities								
1	3	1	1	1	5	7	9	9
2	43	0	42	30	39	47	124	77
3	0	39	0	16	0	1	0	56
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	14	0	10	1	0	1	24
9	0	0	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Goose Island Gully						Total for Goose Island Gully	
Date (DDMMYY)	290789		290789		290789			
Depth (m)	165		219		274			
Set	37		38		39			
	M	F	M	F	M	F	M	F
Length (cm)								
16	-	1	-	-	-	-	-	1
17	1	2	-	-	-	-	1	2
18	3	0	-	-	-	-	3	0
19	0	0	-	-	-	-	0	0
20	0	1	-	-	-	-	0	1
21	3	1	1	1	-	-	4	2
22	1	0	0	1	-	-	1	1
23	7	1	1	5	1	-	9	6
24	6	4	2	7	0	-	8	11
25	6	2	1	3	0	-	7	5
26	0	1	5	2	0	-	5	3
27	4	3	1	3	3	1	8	7
28	2	1	2	9	1	1	5	11
29	1	1	5	6	2	3	8	10
30	2	2	8	4	1	3	11	9
31	7	3	2	8	6	4	15	15
32	7	8	6	9	2	10	15	27
33	6	6	7	7	4	7	17	20
34	10	3	10	2	6	6	26	11
35	2	3	3	1	1	5	6	9
36	2	6	2	3	11	1	15	10
37	11	5	3	4	17	3	31	12
38	8	2	12	5	17	9	37	16
39	7	5	7	5	10	7	24	17
40	7	5	1	7	11	4	19	16
41	8	9	-	5	6	6	14	20
42	3	6	-	6	-	10	3	22
43	1	3	-	8	-	8	1	19
44	1	7	-	6	-	6	1	19
45	-	5	-	4	-	7	-	16
46	-	2	-	3	-	1	-	6
47	-	0	-	1	-	-	-	1
48	-	1	-	-	-	-	-	1
49	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-
Total	116	99	79	125	99	102	294	326
Maturities								
1	19	18	19	33	12	22	50	73
2	28	28	16	24	41	16	85	68
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	7	0	8	0	9	0	24
9	0	0	0	0	0	0	0	0

Table 6 (cont'd)

Stock			Quatsino			
Date (DDMMYY)	170789		170789		180789	
Depth (m)	210		247		210	
Set	12		13		14	
	M	F	M	F	M	F
Length (cm)						
16	-	-	-	-	-	-
17	1	-	-	-	-	-
18	0	-	-	-	1	1
19	0	-	-	-	0	0
20	0	-	-	-	1	0
21	0	-	-	-	1	0
22	0	-	-	-	1	0
23	0	-	-	-	2	2
24	0	1	-	-	0	1
25	0	1	-	-	2	0
26	0	0	-	-	0	0
27	1	0	-	-	0	1
28	0	0	-	-	0	0
29	0	0	1	-	0	0
30	0	0	0	1	0	0
31	1	0	3	0	0	0
32	0	0	7	4	1	0
33	6	1	4	3	2	1
34	5	0	21	6	3	4
35	8	1	18	14	7	3
36	5	9	12	15	3	5
37	7	8	12	19	11	4
38	10	7	10	5	13	5
39	5	14	9	4	11	5
40	5	13	4	5	8	11
41	4	20	6	3	5	11
42	3	17	2	2	4	10
43	1	7	0	9	0	5
44	-	8	3	4	0	7
45	-	14	-	3	1	16
46	-	8	-	2	-	15
47	-	4	-	-	-	12
48	-	4	-	-	-	4
49	-	-	-	-	-	1
50	-	-	-	-	-	-
51	-	-	-	-	-	-
Total	62	137	112	99	77	124
Maturities						
1	2	3	5	3	5	1
2	26	65	44	44	36	56
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	4	0	4	0	2
9	0	0	0	0	0	0

Table 6 (cont'd)

Stock	Quatsino		Total for Quatsino	
Date (DDMMYY)	180789			
Depth (m)	256			
Set	15			
	M	F	M	F
Length (cm)				
16	-	-	-	-
17	-	-	1	-
18	-	-	1	1
19	-	-	0	0
20	-	-	1	0
21	-	-	1	0
22	-	-	1	0
23	-	-	2	2
24	-	-	0	2
25	-	-	2	1
26	1	-	1	0
27	1	-	2	1
28	0	-	0	0
29	0	-	1	0
30	0	1	0	2
31	0	0	4	0
32	5	1	13	5
33	4	2	16	7
34	5	4	34	14
35	7	4	40	22
36	6	3	26	32
37	11	9	41	40
38	13	2	46	19
39	23	4	48	27
40	24	2	41	31
41	30	6	45	40
42	18	7	27	36
43	8	4	9	25
44	1	5	4	24
45	1	2	2	35
46	-	5	-	30
47	-	-	-	16
48	-	-	-	8
49	-	-	-	1
50	-	-	-	-
51	-	-	-	-
Total	158	61	409	421
Maturities				
1	6	2	18	9
2	63	26	169	191
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	3	0	13
9	0	0	0	0

Table 6 (cont'd)

Stock	Nootka		Total for Nootka	
Date (DDMMYY)	180789			
Depth (m)	289			
Set	16			
	M	F	M	F
Length (cm)				
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-
21	-	-	-	-
22	-	-	-	-
23	-	-	-	-
24	-	-	-	-
25	-	-	-	-
26	-	-	-	-
27	-	-	-	-
28	-	-	-	-
29	-	-	-	-
30	1	-	1	-
31	0	3	0	3
32	6	4	6	4
33	9	6	9	6
34	10	5	10	5
35	25	20	25	20
36	13	18	13	18
37	8	21	8	21
38	9	13	9	13
39	7	8	7	8
40	7	12	7	12
41	3	8	3	8
42	3	3	3	3
43	-	4	-	4
44	-	2	-	2
45	-	0	-	0
46	-	2	-	2
47	-	1	-	1
48	-	0	-	0
49	-	1	-	1
50	-	-	-	-
51	-	-	-	-
Total	101	131	101	131
Maturities				
1	2	1	2	1
2	44	53	44	53
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
9	0	0	0	0

Table 6 (cont'd)

Stock	Southwest Vancouver Island					
Date (DDMMYY)	190789		190789		190789	
Depth (m)	283		229		183	
Set	18		19		20	
	M	F	M	F	M	F
Length (cm)						
16	-	-	-	-	-	-
17	-	-	1	-	-	-
18	-	-	0	-	-	1
19	-	-	0	-	3	0
20	-	-	0	-	0	1
21	-	-	0	1	0	0
22	-	-	2	0	0	0
23	-	-	2	1	1	0
24	-	-	2	0	2	2
25	-	-	2	4	7	6
26	-	-	2	2	10	8
27	-	-	4	0	17	5
28	1	-	3	4	10	3
29	0	-	2	0	5	4
30	1	2	5	3	4	2
31	4	2	8	6	3	1
32	8	6	6	10	1	0
33	8	9	13	14	3	2
34	16	9	16	11	0	0
35	22	16	6	6	0	0
36	10	23	12	5	2	0
37	7	13	5	8	1	0
38	4	13	5	4	1	1
39	4	9	2	7	-	0
40	7	5	2	6	-	0
41	0	5	2	8	-	0
42	0	2	0	0	-	0
43	0	3	1	0	-	0
44	0	1	-	4	-	1
45	0	1	-	2	-	-
46	0	1	-	1	-	-
47	0	-	-	-	-	-
48	0	-	-	-	-	-
49	1	-	-	-	-	-
50	-	-	-	-	-	-
51	-	-	-	-	-	-
Total	93	120	103	107	70	37
Maturities						
1	0	0	15	10	0	0
2	42	58	26	48	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	1	0	0
9	0	0	0	0	0	0

Table 6 (cont'd)

Stock	SW Van. Is.		Total for Southwest Van. Is.		Grand Total	
Date (DDMMYY)	190789					
Depth (m)	192					
Set	21					
	M	F	M	F	M	F
Length (cm)						
16	-	-	-	-	-	1
17	-	-	1	-	3	2
18	-	-	0	1	4	2
19	1	-	4	0	4	0
20	0	-	0	1	2	2
21	0	-	0	1	5	3
22	0	-	2	0	8	3
23	0	-	3	1	16	11
24	0	-	4	2	15	19
25	0	1	9	11	20	22
26	0	1	12	11	32	22
27	0	0	21	5	39	19
28	1	0	15	7	31	22
29	1	0	8	4	27	22
30	0	0	10	7	36	36
31	2	1	17	10	61	55
32	5	3	20	19	83	87
33	8	9	32	34	131	100
34	5	7	37	27	187	112
35	7	9	35	31	242	180
36	8	6	32	34	276	221
37	11	13	24	34	363	276
38	7	12	17	30	381	269
39	7	10	13	26	361	323
40	4	10	13	21	309	342
41	4	8	6	21	256	341
42	3	4	3	6	180	242
43	1	7	2	10	82	192
44	1	11	1	17	35	182
45	-	6	0	9	9	165
46	-	4	0	6	7	133
47	-	2	0	2	1	87
48	-	-	0	-	0	34
49	-	-	1	-	3	12
50	-	-	-	-	-	0
51	-	-	-	-	-	1
Total	76	124	342	388	3209	3540
Maturities						
1	6	6	21	16	151	156
2	31	49	99	155	1315	1140
3	0	0	0	0	14	280
4	0	0	0	0	1	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	8	0	9	3	182
9	0	0	0	0	0	0

Table 7. Summary of gonad maturity stages of Pacific ocean perch, S. alutus, sampled aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for description of maturity codes. (LAN = Langara, RSD = Rennell Sound, ANT = Anthony Island, MOR = Moresby Gully, MIT = Mitchell's Gully, GIG = Goose Island Gully, QUAT = Quatsino, NOOT = Nootka, SWVI = southwest Vancouver Island)

Females

Code	LAN	RSD	ANT	MOR	MIT	GIG	QUAT	NOOT	SWVI
1	0	1.0	0	10.2	5.4	44.2	4.2	1.9	8.9
2	97.7	93.9	94.9	20.0	46.4	41.3	89.7	98.1	86.1
3	0	0	0	49.6	33.7	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	2.3	5.1	5.1	20.2	14.5	14.5	6.1	0	5.0
9	0	0	0	0	0	0	0	0	0

Males

Code	LAN	RSD	ANT	MOR	MIT	GIG	QUAT	NOOT	SWVI
1	2.7	0	2.4	9.0	6.7	37.0	9.6	4.3	17.5
2	96.8	100.0	97.6	87.7	92.6	63.0	90.4	95.7	82.5
3	0	0	0	2.9	0	0	0	0	0
4	0	0	0	0.2	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0.5	0	0	0.2	0.7	0	0	0	0
9	0	0	0	0	0	0	0	0	0

Table 8. Summary of length frequency and maturity of *Sebastes entomelas* collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for maturity code descriptions.

Area	Goose Is. Gully		Nootka		Total	
Date (DDMMYY)	290789		190789			
Depth (m)	133		165			
Set	40		17			
	M	F	M	F	M	F
Length (cm)						
34	-	-	1	-	1	-
35	-	-	1	1	1	1
36	-	-	0	0	0	0
37	-	-	0	0	0	0
38	-	-	0	0	0	0
39	-	-	0	0	0	0
40	-	-	4	2	4	2
41	-	-	0	1	0	1
42	-	-	0	0	0	0
43	-	-	0	2	0	2
44	-	-	1	0	1	0
45	-	-	1	1	1	1
46	2	-	2	1	4	1
47	1	-	-	-	1	0
48	0	-	-	-	0	0
49	2	-	-	-	2	0
50	2	-	-	-	2	0
51	1	-	-	-	1	0
52	0	-	-	-	0	0
53	1	-	-	-	1	0
54	-	-	-	-	-	0
55	-	-	-	-	-	0
56	-	1	-	-	-	1
Total	9	1	10	8	19	9
Maturities						
1	0	0	2	0	2	0
2	9	0	7	4	16	4
3	0	0	0	0	0	0
4	0	0	1	0	1	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	1	0	4	0	5
9	0	0	0	0	0	0

Table 9. Summary of length frequency and maturity of *Sebastes flavidus* collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for maturity code descriptions.

Area	Goose Is. Gully		Nootka		Total	
Date (DDMMYY)	290789		190789			
Depth (m)	133		165			
Set	40		17			
	M	F	M	F	M	F
Length (cm)						
37	-	1	-	-	-	1
38	-	0	2	1	2	1
39	1	0	3	2	4	2
40	0	0	1	1	1	1
41	1	1	7	8	8	9
42	2	0	13	5	15	5
43	7	4	10	3	17	7
44	7	3	24	8	31	11
45	13	8	17	9	30	17
46	15	10	18	12	33	22
47	14	7	8	9	22	16
48	11	16	8	5	19	21
49	5	20	6	11	11	31
50	6	11	-	4	6	15
51	1	14	-	5	1	19
52	-	6	-	4	-	10
53	-	8	-	1	-	9
54	-	3	-	-	-	3
55	-	4	-	-	-	4
56	-	0	-	-	-	0
57	-	1	-	-	-	1
Total	83	117	117	88	200	205
Maturities						
1	0	0	0	0	0	0
2	35	23	39	30	74	53
3	0	0	0	0	0	0
4	0	0	17	0	17	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	5	37	1	13	6	50
9	0	0	0	0	0	0

Table 10. Summary of length frequency and maturity of Sebastes aleutianus collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for maturity code descriptions.

Area	Langara	
Date (DDMMYY)	260789	
Depth (m)	338	
Set	23	
	M	F
Length (cm)		
38	-	1
39	-	0
40	-	2
41	-	1
42	1	2
43	6	3
44	6	9
45	17	13
46	14	20
47	15	11
48	13	18
49	6	10
50	2	10
51	3	5
52	1	2
53	-	1
54	-	1
55	-	1
56	-	0
57	-	1
58	-	0
59	-	1
Total	84	112
Maturities		
1	0	0
2	45	50
3	0	0
4	0	0
5	1	0
6	0	0
7	1	3
9	0	0

Table 11. Summary of length frequency and maturity of *Sebastes reedi* collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for maturity code descriptions.

Area	Rennell Sound	
Date (DDMMYY)	270789	
Depth (m)	223	
Set	28	
	M	F
Length (cm)		
31	-	1
32	-	1
33	-	0
34	-	1
35	-	1
36	-	0
37	-	0
38	3	2
39	3	5
40	12	10
41	17	18
42	11	16
43	7	16
44	11	19
45	7	19
46	1	10
47	-	2
48	-	1
Total	72	122
Maturities		
1	0	1
2	24	7
3	0	0
4	0	0
5	0	0
6	0	0
7	7	61
9	0	0

Table 12. Summary of length frequency and maturity of *Sebastes brevispinis* collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989. See Appendix Table 3 for maturity code descriptions.

Area	Moresby	
Date (DDMMYY)	280789	
Depth (m)	219	
Set	34	
	M	F
Length (cm)		
37	-	1
38	-	0
39	-	2
40	-	2
41	-	1
42	1	0
43	0	0
44	0	1
45	2	1
46	1	2
47	5	4
48	15	0
49	14	8
50	21	10
51	12	16
52	13	8
53	14	12
54	6	7
55	5	3
56	2	7
57	3	7
58	0	4
59	1	2
60	-	2
61	-	0
62	-	0
63	-	0
64	-	1
Total	115	101
Maturities		
1	0	0
2	31	2
3	0	0
4	0	1
5	0	3
6	0	2
7	28	33
9	0	0

Table 13. Summary of length frequency of Pacific hake, *Merluccius productus*, collected aboard the F/V OCEAN SELECTOR, July 12 to 30, 1989.

Area	Goose Is. Gully
Date (DDMMYY)	290789
Depth (m)	133
Set	40

Length (cm)	M	F
47	1	-
48	0	1
49	0	1
50	0	0
51	4	3
52	1	2
53	1	2
54	1	1
55	0	7
56	0	11
57	0	3
58	1	7
59	0	12
60	0	12
61	1	18
62	-	11
63	-	14
64	-	5
65	-	2
66	-	8
67	-	5
68	-	3
69	-	2
70	-	2
71	-	1
Total	10	133

Table 14. Scientific and common names for species encountered on the F/V OCEAN SELECTOR, July 12 to 30, 1989.

Rockfish	
Rougheye rockfish	*Sebastes aleutianus*
Pacific ocean perch	*S. alutus*
Redbanded rockfish	*S. babcocki*
Shortraker rockfish	*S. borealis*
Silvergray rockfish	*S. brevispinis*
Darkblotched rockfish	*S. crameri*
Splitnose rockfish	*S. diploproa*
Greenstriped rockfish	*S. elongatus*
Widow rockfish	*S. entomelas*
Yellowtail rockfish	*S. flavidus*
Rosethorn rockfish	*S. helvomaculatus*
Shortbelly rockfish	*S. jordani*
Bocaccio	*S. paucispinis*
Canary rockfish	*S. pinniger*
Redstripe rockfish	*S. proriger*
Yellowmouth rockfish	*S. reedi*
Yelloweye rockfish	*S. ruberrimus*
Harlequin rockfish	*S. variegatus*
Sharpchin rockfish	*S. zacentrus*
Shortspine thornyhead	*Sebastolobus alascanus*
Flatfish	
Arrowtooth flounder	*Atheresthes stomias*
Petrale sole	*Eopsetta jordani*
Rex sole	*Glyptocephalus zachirus*
Flathead sole	*Hippoglossoides elassodon*
Pacific halibut	*Hippoglossus stenolepis*
Rock sole	*Lepidopsetta bilineata*
Slender sole	*Lyopsetta exilis*
Dover sole	*Microstomus pacificus*
English sole	*Parophrys vetulus*
Roundfish	
Sablefish	*Anoplopoma fimbria*
Pacific cod	*Gadus macrocephalus*
Pacific hake	*Merluccius productus*
Lingcod	*Ophiodon elongatus*
Walleye pollock	*Theragra chalcogramma*

Table 14 (cont'd)

Selachii	
Black skate	*Bathyraja trachura*
Ratfish	*Hydrolagus colliei*
Big skate	*Raja binoculata*
Longnose skate	*R. rhina*
Starry skate	*R. stellata*
Spiny dogfish	*Squalus acanthias*
Other Fish	
Pearly prickleback	*Bryozoichthys marjorius*
Pacific herring	*Clupea harenqus pallasi*
Bigmouth sculpin	*Hemitripterus bolini*
Threadfin sculpin	*Icelinus filamentosus*
Bigfin eelpout	*Lycodes cortezianus*
Blackfin sculpin	*Malacocottus kincaidi*
Northern ronquil	*Ronquilus jordani*
Eulachon	*Thaleichthys pacificus*
Prowfish	*Zaprora silenus*
Invertebrates	
Squid	*Ommastrephes bartrami*
	Rossia pacifica
Octopus	*Octopus* sp.
Prawn	*Pandalus platyceros*

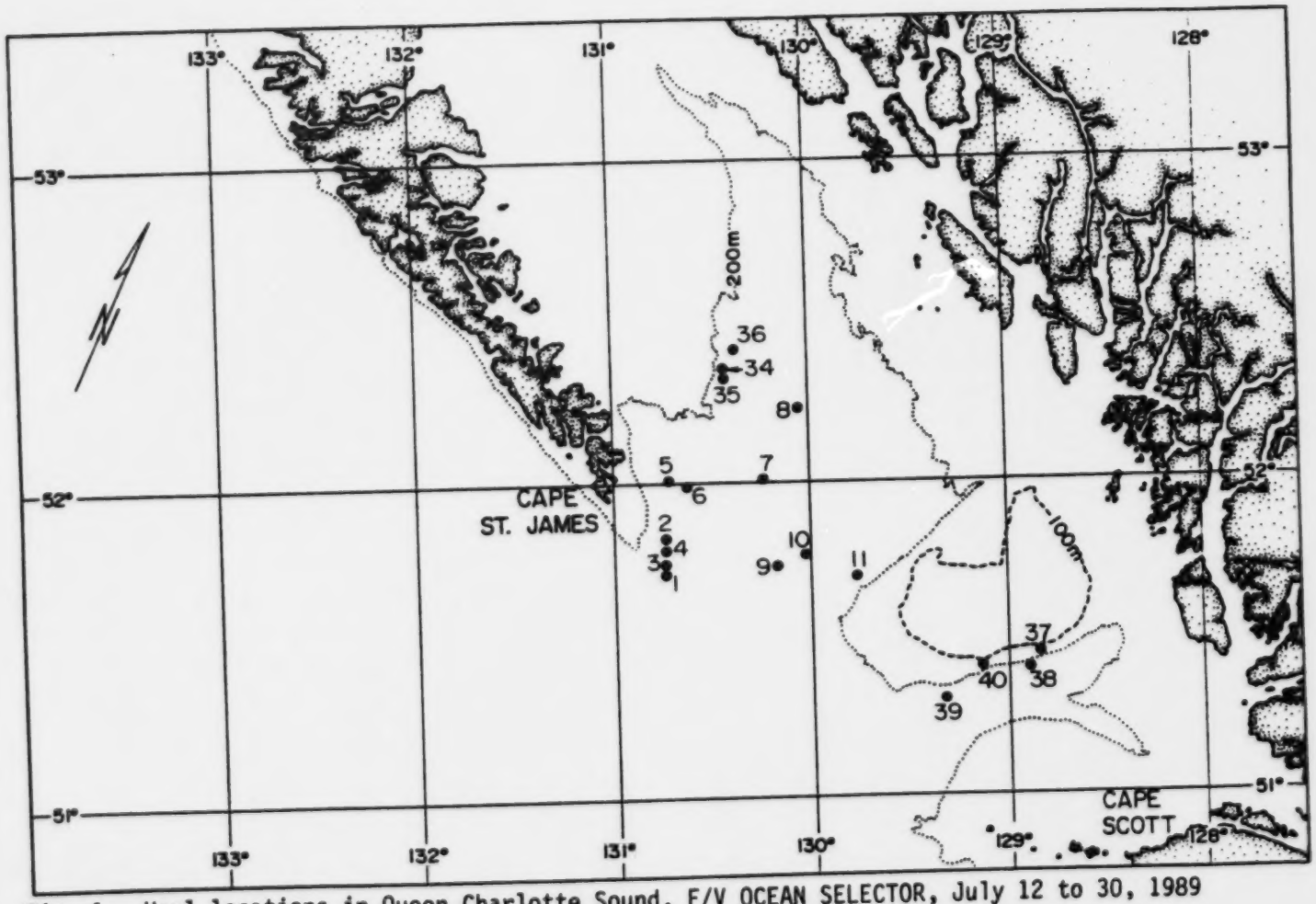


Fig. 1. Haul locations in Queen Charlotte Sound, F/V OCEAN SELECTOR, July 12 to 30, 1989

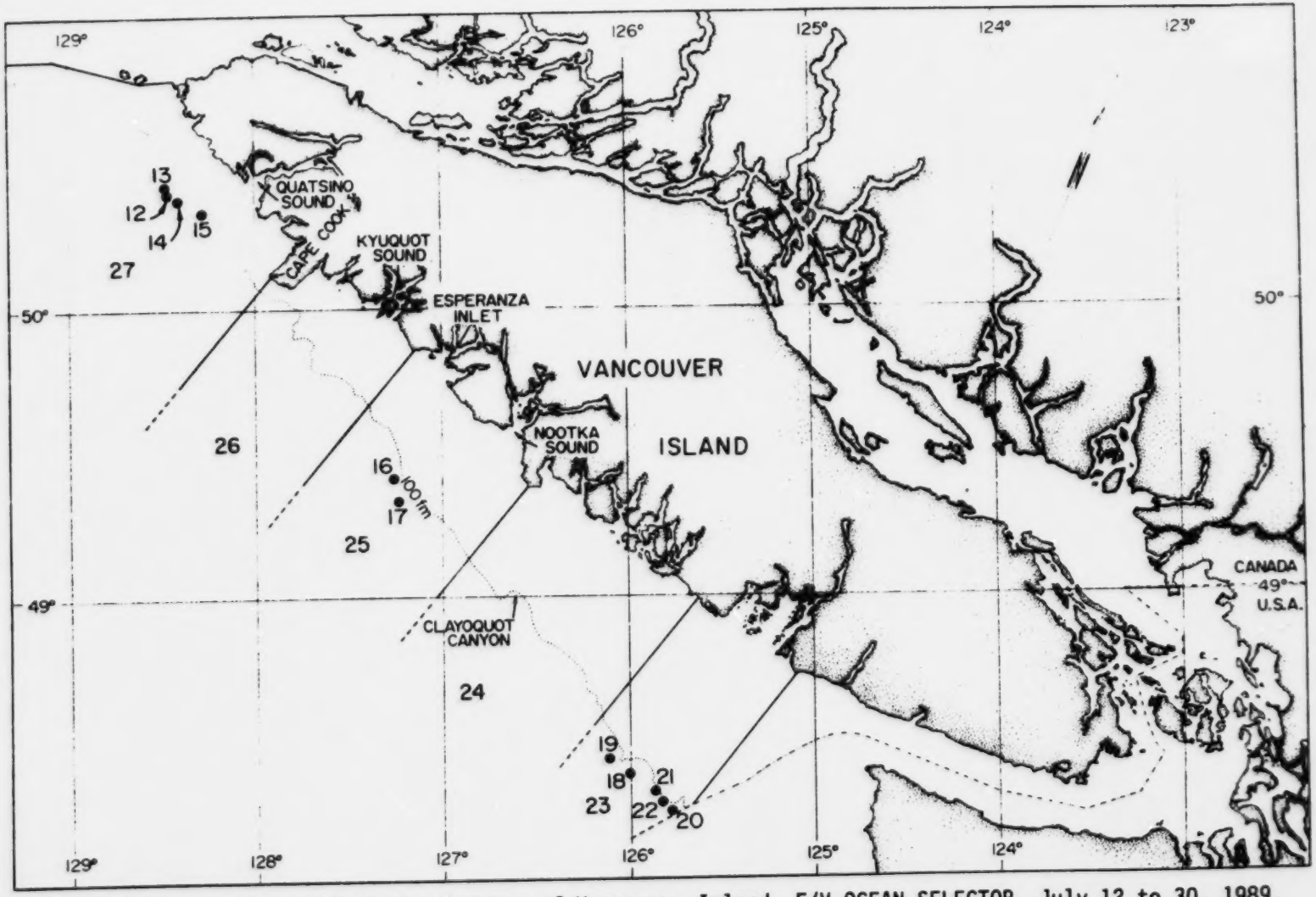


Fig. 2. Haul locations off the west coast of Vancouver Island, F/V OCEAN SELECTOR, July 12 to 30, 1989.

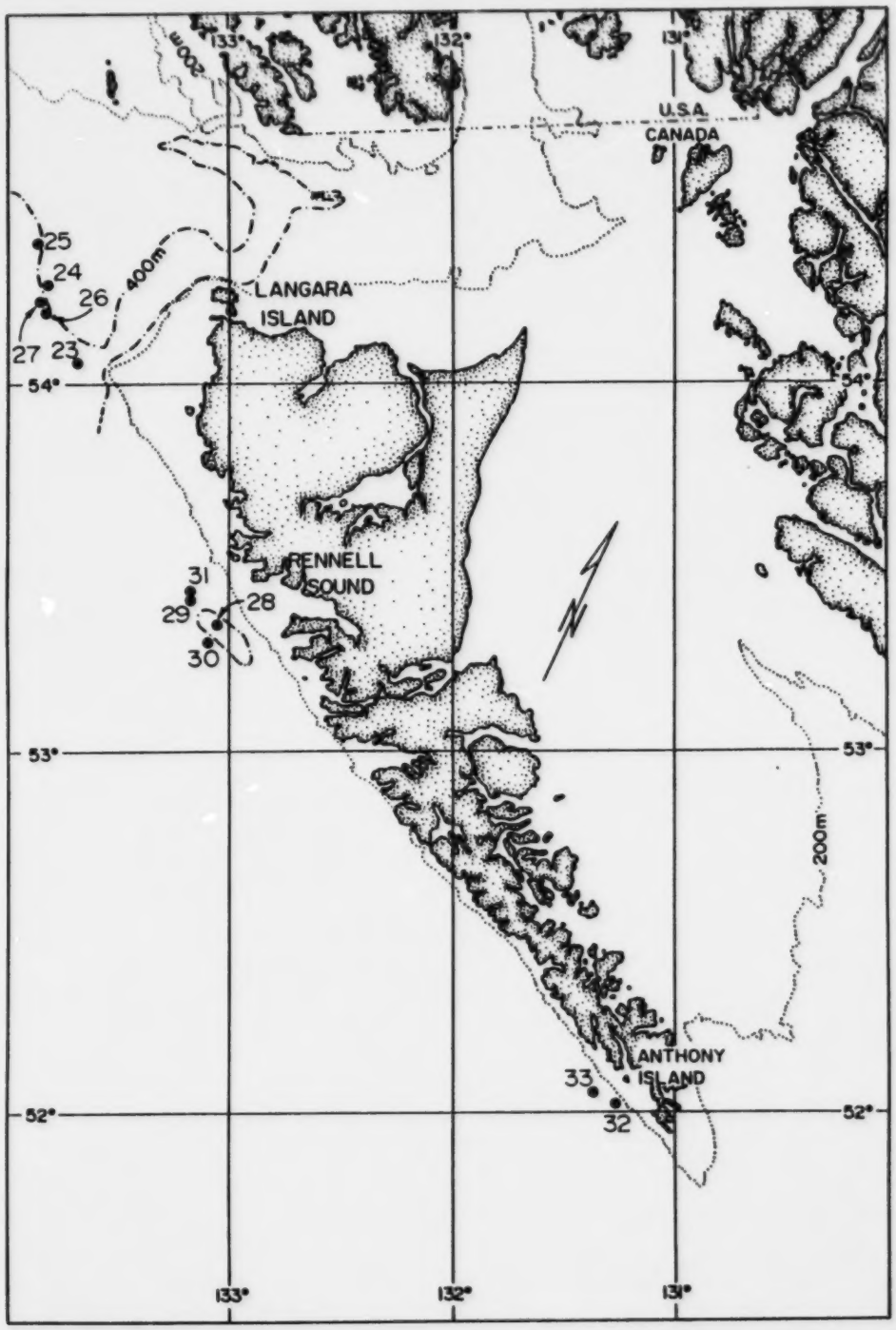


Fig. 3. Haul locations off the west coast of the Queen Charlotte Islands, F/V OCEAN SELECTOR, July 12 to 30, 1989. The 400 m contour is estimated only.

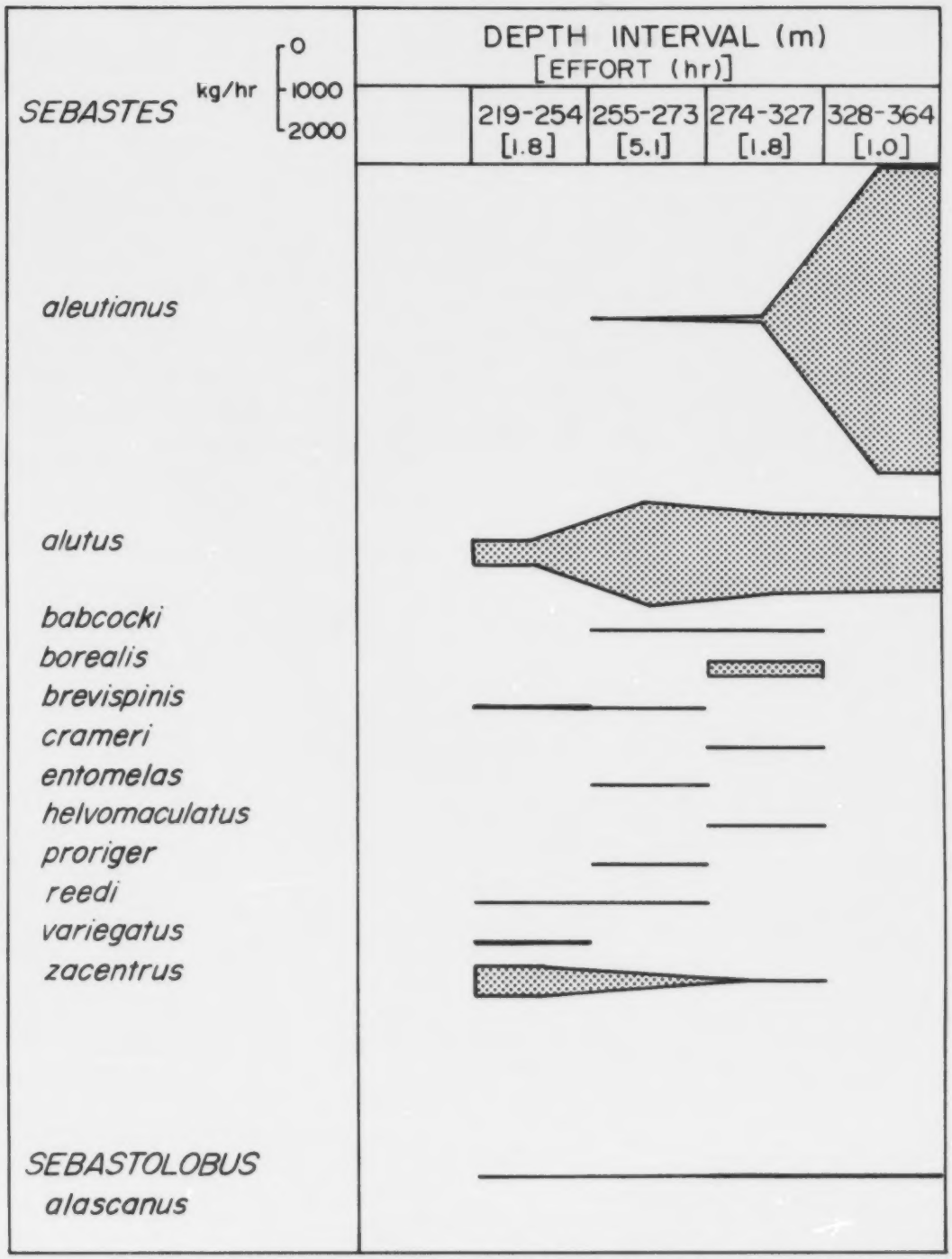


Fig. 4. Schematic illustration of relative catch rates of rockfishes off Langara, F/V OCEAN SELECTOR, July 12 to 30, 1989.

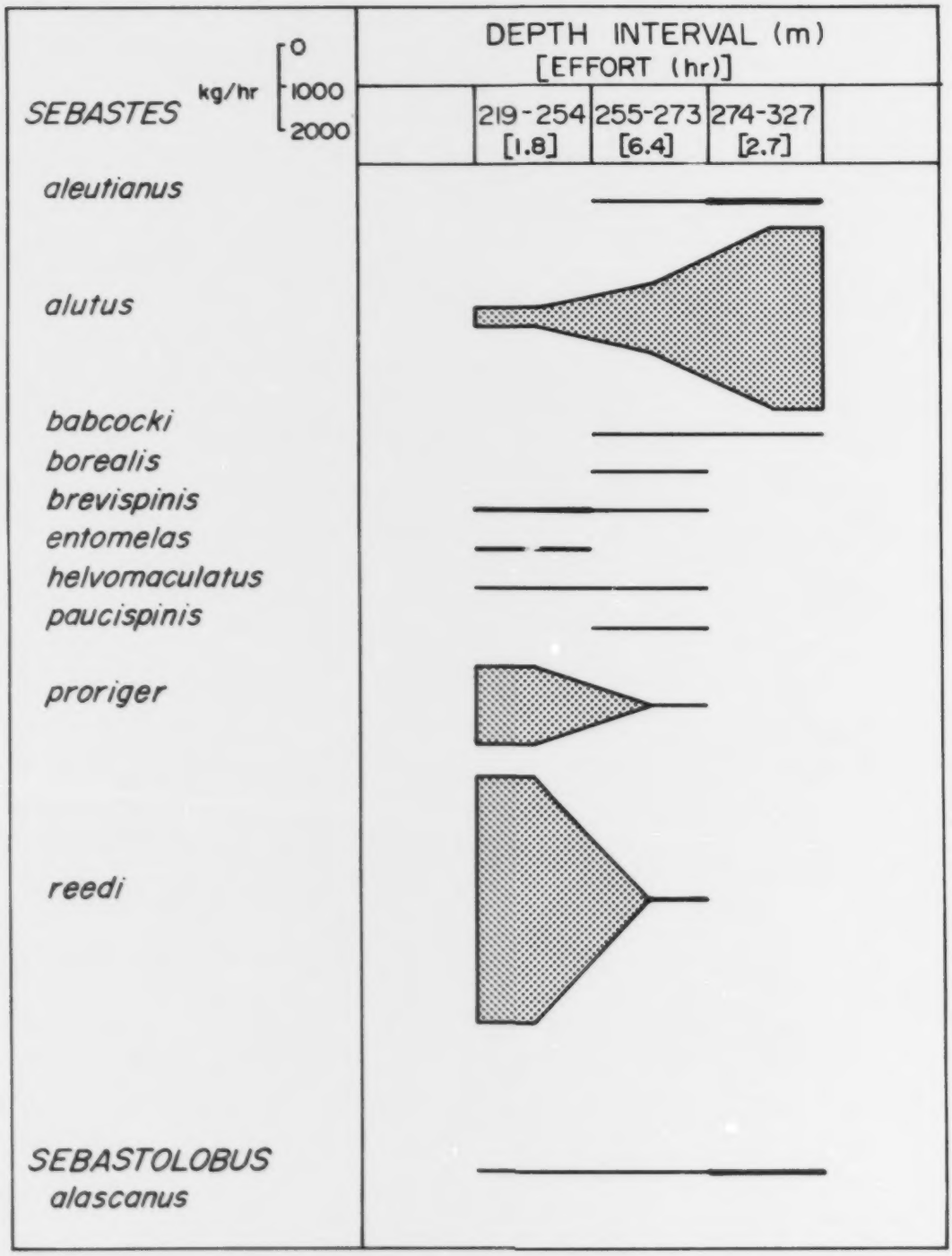


Fig. 5. Schematic illustration of relative catch rates of rockfishes off Rennell Sound, F/V OCEAN SELECTOR, July 12 to 30, 1989.

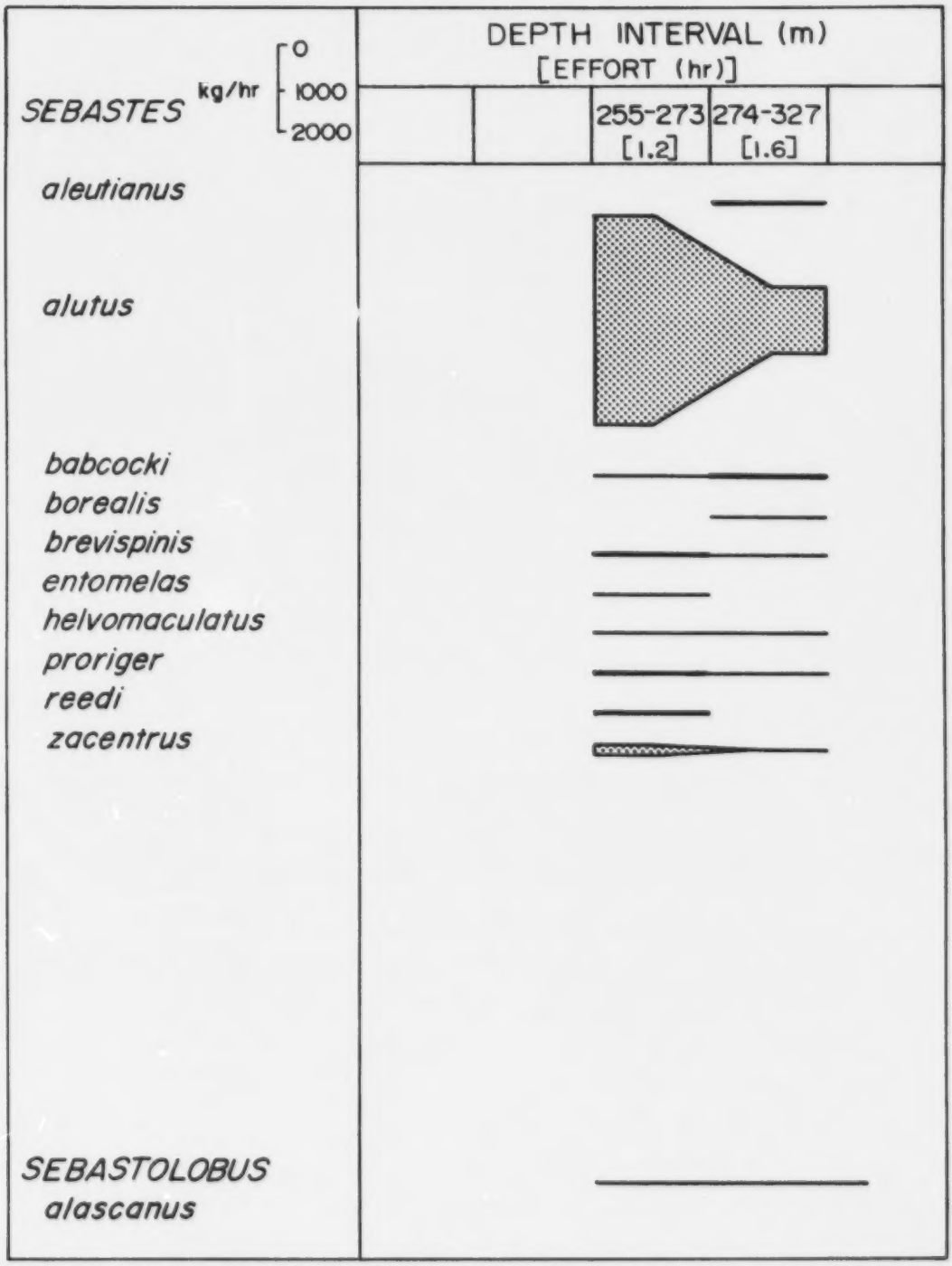


Fig. 6. Schematic illustration of relative catch rates of rockfishes off Anthony Island, F/V OCEAN SELECTOR, July 12 to 30, 1989.

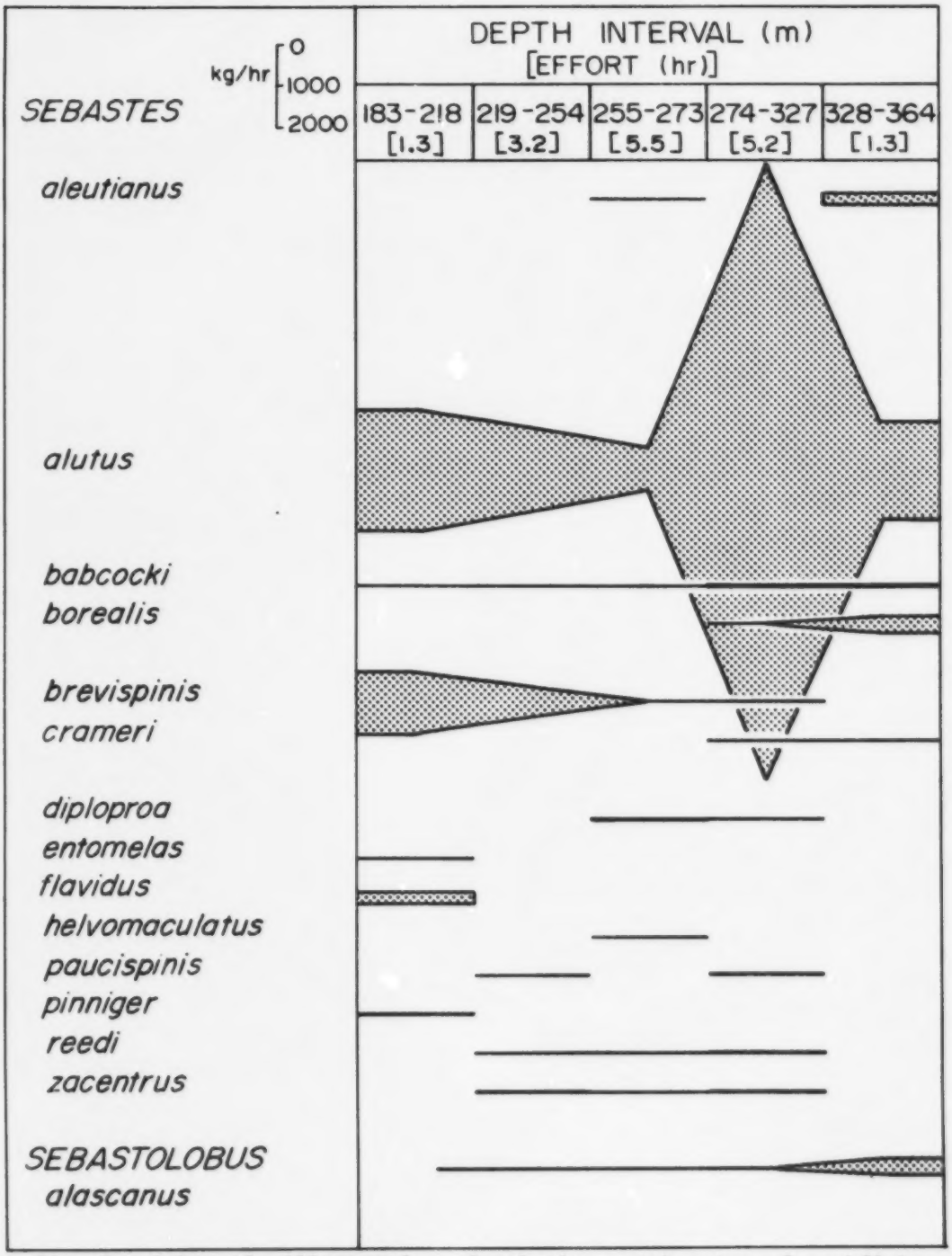


Fig. 7. Schematic illustration of relative catch rates of rockfishes in Moresby Gully, F/V OCEAN SELECTOR, July 12 to 30, 1989.

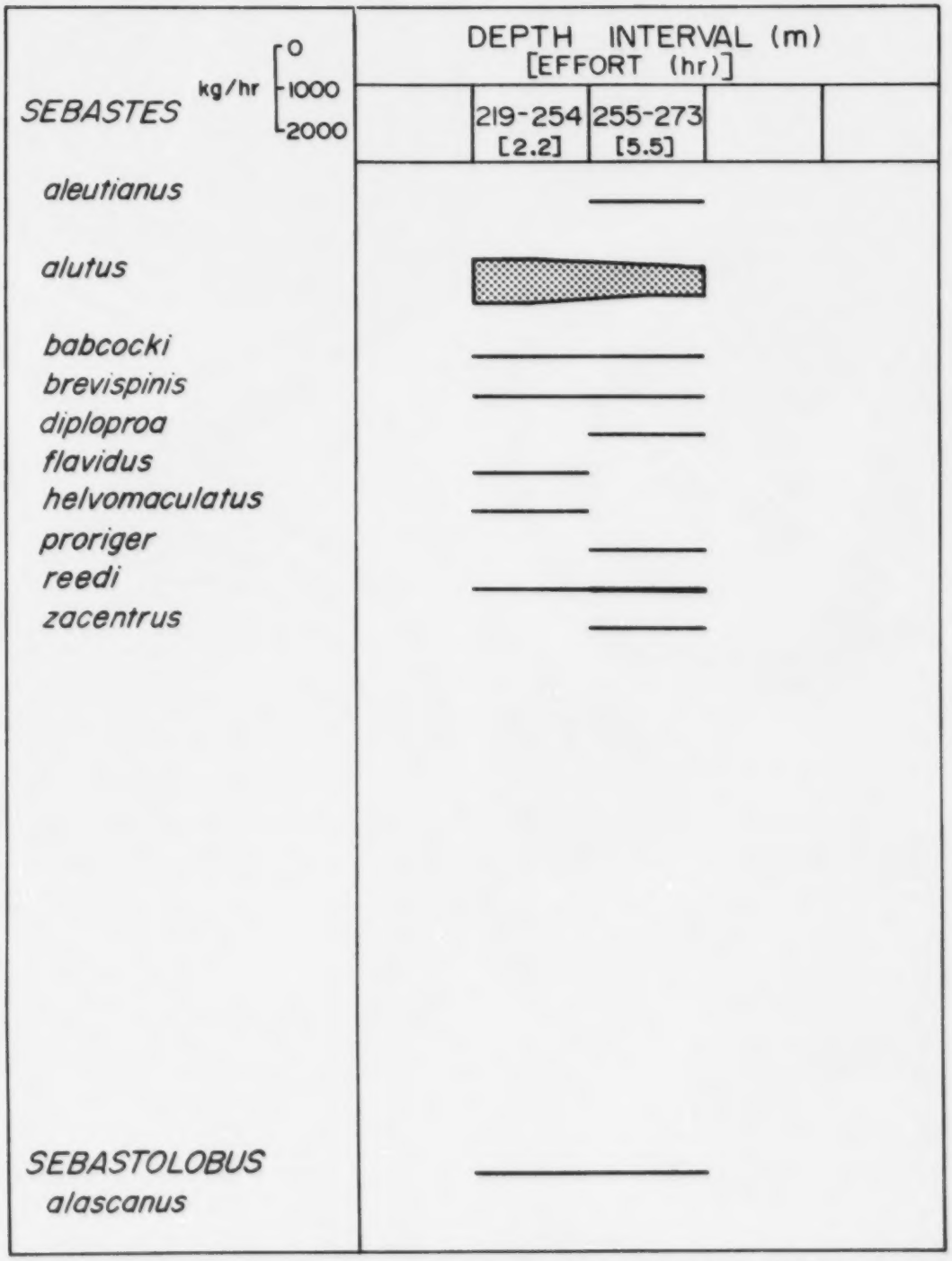


Fig. 8. Schematic illustration of relative catch rates of rockfishes in Mitchell's Gully, F/V OCEAN SELECTOR, July 12 to 30, 1989.

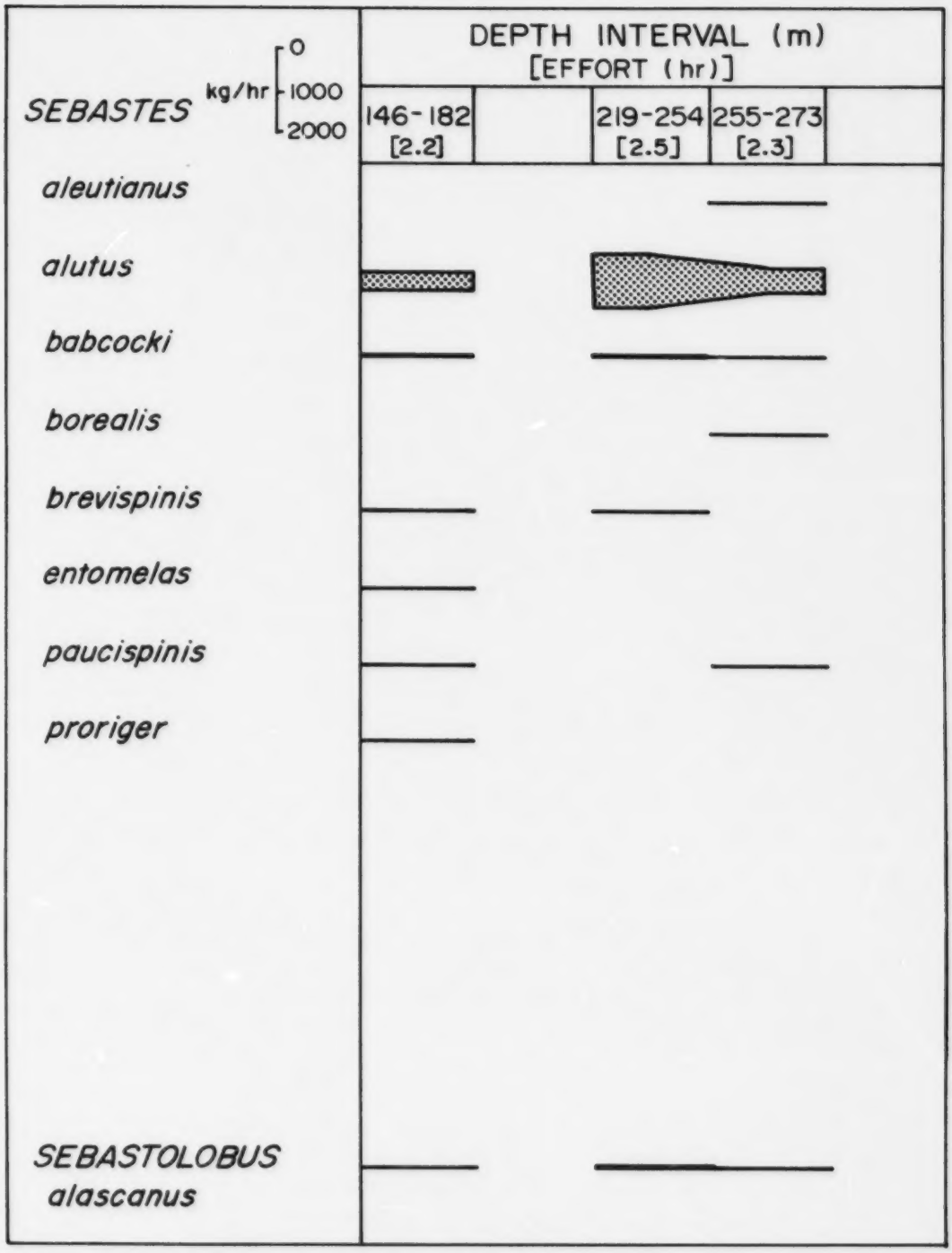


Fig. 9. Schematic illustration of relative catch rates of rockfishes in Goose Island Gully, F/V OCEAN SELECTOR, July 12 to 30, 1989.

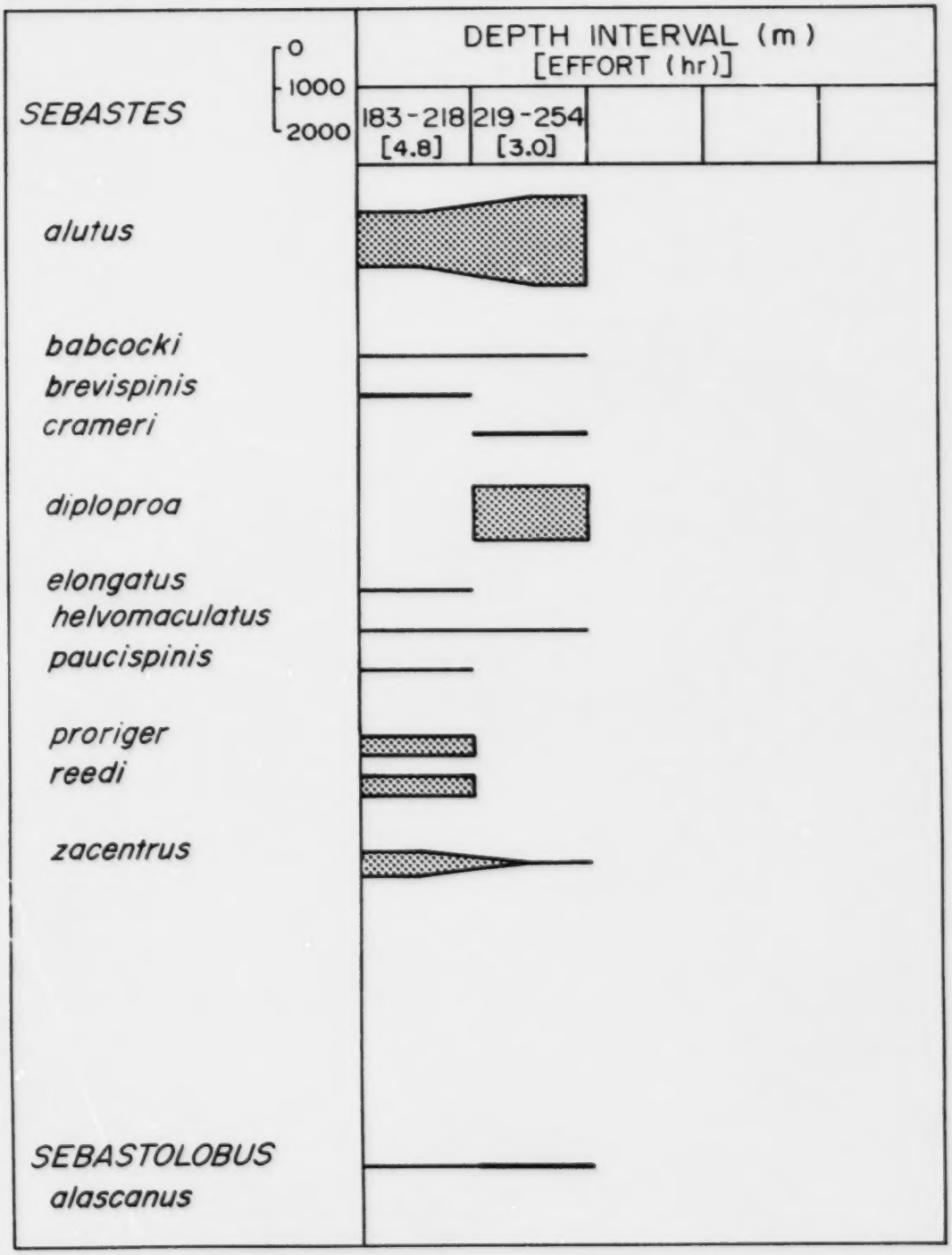


Fig. 10. Schematic illustration of relative catch rates of rockfishes off Quatsino, F/V OCEAN SELECTOR, July 12 to 30, 1989.

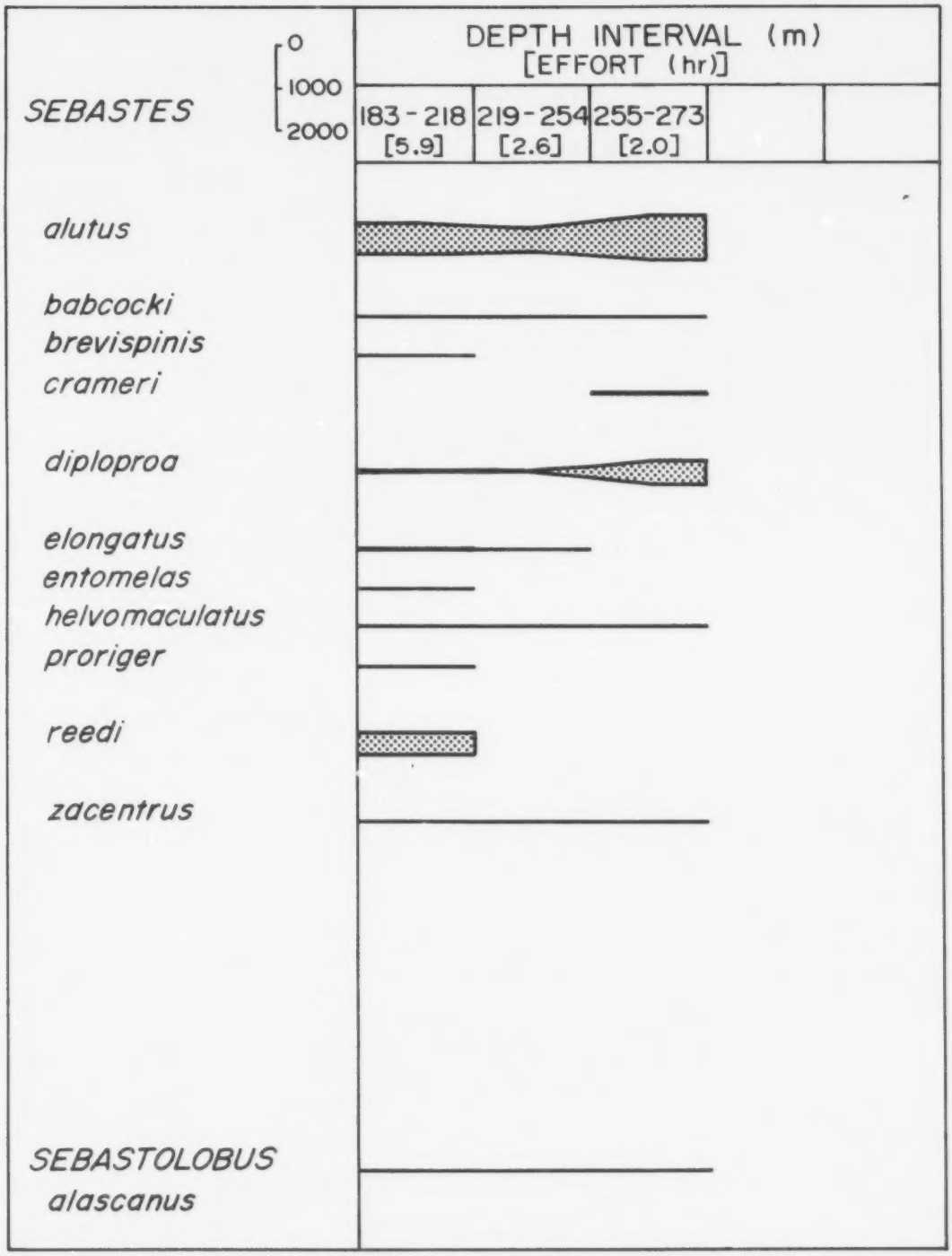


Fig. 11. Schematic illustration of relative catch rates of rockfishes off southwest Vancouver Island, F/V OCEAN SELECTOR, July 12 to 30, 1989.

Appendix Table 1. Vessel specifications for the F/V OCEAN SELECTOR.

Skipper: Dave Clattenburg
Overall Length: 47.9 m (157 ft)
Gross Tons: 452
Horsepower: 850
Capacity: 204,117 kg (450,000 lb)
Total Crew: 6
Fish Storage: Ice, Slush

ELECTRONIC AIDS

Sounder: Epsco Chromascope
Radio: Multiple
Radar: Furuno
Autopilot: Wagner
Loran: Raynav 750
Plotter: Epsco C-Plot 2, JRC NWU-52R
Net Sounder: Furuno

TRAWL GEAR

Double gear and two single winches
Cable per spool: 1,828 m (1,000 fm)
Diameter: 2.86 cm (1.125 in)
Net Reel: standard hydraulic

Appendix Table 2. Bridge log information from the slope rockfish sampling cruise aboard the F/V OCEAN SELECTOR, July 12-30, 1989.

Haul No.		1	2	3	4
Date		JUL 14	JUL 14	JUL 14	JUL 14
Area (Major, Minor)		5B,08	5B,08	5B,08	5B,08
Start Time	(PDT)	7:24	10:30	12:00	21:03
Duration	(Min)	41	25	116	79
Start N. Lat.	(Deg)	51	51	51	51
	(Min)	44.2	48.5	48.5	41.8
W. Long	(Deg)	130	130	130	130
	(Min)	46.8	42.6	42.6	43.3
Start LORAN-C	X	12787.2	12780.5	12780.5	12814.9
	Y	30174.1	30191.4	30191.4	30166.0
Finish N. Lat.	(Deg)	51	51	51	51
	(Min)	42.4	47.9	42.7	47.1
W. Long	(Deg)	130	130	130	130
	(Min)	44.0	43.6	43.9	43.7
Finish LORAN-C	X	12808.7	12779.7	12807.4	12783.8
	Y	30168.8	30188.8	30169.0	30185.9
Haul Distance	(Km)	4.6	1.7	10.9	9.8
	(N Mi)	2.5	0.9	5.9	5.3
Direction (Deg.True)		112	241	246	16
Bottom Depth	(m)	275- 293	293- 329	302- 304	333- 335
	(Fm)	150- 160	160- 180	165- 166	182- 183
Modal Depth	(m)	275	302	320	338
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		FLOOD	SLACK	EBB	FLOOD
Total Catch	(Kg)	9072	11340	43091	4536
Remarks		SNAG-USE	SNAG-USE	USABLE	TORN-USE

Appendix Table 2 (cont'd)

Haul No.	1	2	3	4
Date	JUL 14	JUL 14	JUL 14	JUL 14
Area (Major, Minor)	5B,08	5B,08	5B,08	5B,08
Arrowtooth flounder	27	..	..	..
Dover sole	80	..	..	59
English sole	..	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	..	..	..	..
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	..	377
S. alutus	7608	10123	42716	2992
S. babcocki	53	119	..	236
S. borealis	293	..	..	483
S. brevispinis	..	..	..	..
S. crameri	..	..	..	24
S. diploproa	..	..	..	..
S. elongatus	..	..	..	..
S. entomelas	..	..	..	..
S. flavidus	..	..	..	..
S. helvomaculatus	..	..	..	..
S. paucispinis	..	237	..	..
S. pinniger	..	..	..	..
S. proriger	..	..	..	..
S. reedi	..	178	375	..
S. variegatus	..	..	..	..
S. zacentrus	559	..	..	..
Sebastolobus alascanus	452	..	..	365
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	683	..	..
Pacific cod	..	..	..	..
Pacific hake	..	..	..	..
Prowfish	..	..	..	..
Sablefish	..	..	..	..
Walleye pollock	..	..	..	..
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	9072	11340	43091	4536

Appendix Table 2 (cont'd)

Haul No.		5	6	7	8
Date		JUL 15	JUL 15	JUL 15	JUL 15
Area (Major, Minor)		5B,08	5B,08	5B,08	5C,02
Start Time	(PDT)	9:20	13:05	17:50	21:45
Duration	(Min)	127	127	120	80
Start N. Lat.	(Deg)	51	52	52	52
	(Min)	59.7	4.7	0.6	17.6
W. Long	(Deg)	130	130	130	130
	(Min)	38.8	32.6	13.7	3.2
Start LORAN-C	X	12732.2	13049.6	12835.6	12781.3
	Y	30232.8	30028.1	30249.7	30314.9
Finish N. Lat.	(Deg)	52	51	52	52
	(Min)	6.2	58.9	6.8	14.2
W. Long	(Deg)	130	130	130	130
	(Min)	42.3	35.5	10.8	4.7
Finish LORAN-C	X	12679.1	12750.7	12812.1	12795.3
	Y	30253.2	30231.7	30273.2	30302.4
Haul Distance	(Km)	12.8	11.3	12.0	6.5
	(N Mi)	6.9	6.1	6.5	3.5
Direction (Deg.True)		57	195	11	197
Bottom Depth	(m)	256- 229	278- 311	269- 278	214- 212
	(Fm)	140- 125	152- 170	147- 152	117- 116
Modal Depth	(m)	265	294	274	214
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		FLOOD	EBB	EBB	..
Total Catch	(Kg)	3629	3225	2722	6804
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	5	6	7	8
Date	JUL 15	JUL 15	JUL 15	JUL 15
Area (Major, Minor)	5B,08	5B,08	5B,08	5C,02
Arrowtooth flounder	83	50	49	496
Dover sole	..	..	29	..
English sole	12	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	83	10	..	20
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	..	..
S. alutus	3132	2547	1785	3729
S. babcocki	71	10	254	20
S. borealis	..	134	..	..
S. brevispinis	12	21	10	1805
S. crameri	..	72	..	..
S. diploproa	..	247	459	..
S. elongatus	..	..	..	..
S. entomelas	..	..	..	79
S. flavidus	..	..	..	456
S. helvomaculatus	..	..	..	..
S. paucispinis	..	..	..	..
S. pinniger	..	..	..	159
S. proriger	..	..	..	..
S. reedi	12	21	..	..
S. variegatus	..	..	..	..
S. zacentrus	24	..	..	..
Sebastolobus alascanus	47	103	78	..
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	..
Pacific cod	35	..	..	..
Pacific hake	..	..	..	..
Prowfish	..	..	..	..
Sablefish	71	10	29	40
Walleye pollock	47	..	29	..
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	3629	3225	2722	6804

Appendix Table 2 (cont'd)

Haul No.		9	10	11	12
Date		JUL 16	JUL 16	JUL 16	JUL 17
Area (Major, Minor)		5B,08	5B,08	5B,08	3D,27
Start Time	(PDT)	15:05	18:52	23:36	14:05
Duration	(Min)	132	140	189	135
Start N. Lat.	(Deg)	51	51	51	50
	(Min)	46.7	41.5	39.9	29.8
W. Long	(Deg)	129	130	129	128
	(Min)	59.5	13.8	47.7	32.8
Start LORAN-C	X	12978.4	12942.7	13069.6	13735.0
	Y	30206.7	30179.7	30186.8	29893.9
Finish N. Lat.	(Deg)	51	51	51	50
	(Min)	43.0	45.0	40.9	24.2
W. Long	(Deg)	130	130	129	128
	(Min)	9.7	2.4	45.6	27.1
Finish LORAN-C	X	12952.7	12974.6	13074.1	13781.5
	Y	30187.4	30198.7	30191.9	29864.5
Haul Distance	(Km)	13.5	14.6	15.2	12.4
	(N Mi)	7.3	7.9	8.2	6.7
Direction (Deg.True)		242	68	56	166
Bottom Depth	(m)	247- 243	225- 280	267- 265	201- 216
	(Fm)	135- 133	123- 153	146- 145	110- 118
Modal Depth	(m)	245	260	267	210
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		SLACK	EBB	FLOOD	SLACK
Total Catch	(Kg)	2948	3402	2268	6804
Remarks		USABLE	SNAG-USE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	9	10	11	12
Date	JUL 16	JUL 16	JUL 16	JUL 17
Area (Major, Minor)	5B,08	5B,08	5B,08	3D,27
Arrowtooth flounder	133	11	63	151
Dover sole	19	33	32	38
English sole	..	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	19	22	..	19
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	25	..
S. alutus	2238	2128	1210	2530
S. babcocki	47	11	13	..
S. borealis	..	..	..	..
S. brevispinis	38	121	..	265
S. crameri	..	..	..	..
S. diploproa	..	219	38	..
S. elongatus	..	..	..	..
S. entomelas	..	..	..	..
S. flavidus	19	..	..	..
S. helvomaculatus	38	..	..	..
S. paucispinis	..	..	..	..
S. pinniger	..	..	..	..
S. proriger	..	11	88	794
S. reedi	47	450	69	813
S. variegatus	..	..	..	..
S. zacentrus	..	99	13	1058
Sebastolobus alascanus	95	77	6	76
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	662
Pacific cod	..	..	..	19
Pacific hake	47	33	271	227
Prowfish	..	..	..	..
Sablefish	66	132	372	95
Walleye pollock	133	44	44	..
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	9	11	..	57
Other Selachii	..	..	..	..
Squid	..	..	24	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	2948	3402	2268	6804

Appendix Table 2 (cont'd)

Haul No.		13	14	15	16
Date		JUL 17	JUL 18	JUL 18	JUL 18
Area (Major, Minor)		3D,27	3D,27	3D,27	3C,25
Start Time	(PDT)	17:30	6:05	9:55	22:00
Duration	(Min)	135	150	43	60
Start N. Lat.	(Deg)	50	50	50	49
	(Min)	21.3	29.4	18.8	26.3
W. Long	(Deg)	128	128	128	127
	(Min)	20.0	32.6	17.1	14.9
Start LORAN-C	X	13824.9	13737.3	13847.0	14264.0
	Y	29849.5	29891.6	29835.2	29500.8
Finish N. Lat.	(Deg)	50	50	50	49
	(Min)	24.9	23.6	21.0	23.2
W. Long	(Deg)	128	128	128	127
	(Min)	28.3	25.2	17.7	14.6
Finish LORAN-C	X	13773.4	13792.8	13837.2	14270.6
	Y	29868.2	29861.5	29847.3	29480.5
Haul Distance	(Km)	11.8	13.9	4.1	5.8
	(N Mi)	6.4	7.5	2.2	3.1
Direction (Deg.True)		242	158	307	165
Bottom Depth	(m)	254- 238	205- 208	256- 199	271- 294
	(Fm)	139- 130	112- 114	140- 109	148- 161
Modal Depth	(m)	247	210	256	289
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		EBB	FLOOD	FLOOD	EBB
Total Catch	(Kg)	6849	6804	3402	2722
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	13	14	15	16
Date	JUL 17	JUL 18	JUL 18	JUL 18
Area (Major, Minor)	3D,27	3D,27	3D,27	3C,25
Arrowtooth flounder	44	101	61	448
Dover sole	..	20	..	142
English sole	..	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	22	..	..	39
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	..	..
S. alutus	3228	3744	1879	849
S. babcocki	..	20	8	16
S. borealis	..	..	..	..
S. brevispinis	..	221	..	..
S. crameri	436	..	23	8
S. diploproa	2115	..	1280	409
S. elongatus	..	20	..	..
S. entomelas	..	..	..	..
S. flavidus	..	..	..	..
S. helvomaculatus	22	20	8	..
S. paucispinis	..	322	..	..
S. pinniger	..	..	..	..
S. proriger	..	322	..	..
S. reedi	..	263	..	..
S. variegatus	..	..	..	..
S. zacentrus	109	966	30	8
Sebastolobus alascanus	218	20	45	102
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	181	..	..
Pacific cod	..	..	..	..
Pacific hake	44	..	..	189
Prowfish	..	..	..	..
Sablefish	22	262	68	488
Walleye pollock	44	20	..	24
Other Roundfish	..	..	..	..
Longnose skate	..	262	..	..
Ratfish	..	40	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	22	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	6849	6804	3402	2722

Appendix Table 2 (cont'd)

Haul No.		17	18	19	20
Date		JUL 19	JUL 19	JUL 19	JUL 19
Area (Major, Minor)		3C,25	3C,23	3C,23	3C,21
Start Time	(PDT)	1:40	13:17	16:00	20:25
Duration	(Min)	100	120	155	95
Start N. Lat.	(Deg)	49	48	48	48
	(Min)	35.3	23.7	24.7	20.1
W. Long	(Deg)	127	126	125	125
	(Min)	16.4	3.5	58.3	51.4
Start LORAN-C	X	14241.2	14626.0	14645.1	14672.7
	Y	29539.6	28992.3	28990.0	28945.6
Finish N. Lat.	(Deg)	49	48	48	48
	(Min)	30.4	23.7	27.1	16.0
W. Long	(Deg)	127	126	126	125
	(Min)	13.5	1.7	7.3	46.7
Finish LORAN-C	X	14263.0	14632.8	14609.8	14691.4
	Y	29526.1	28989.3	29022.8	28907.8
Haul Distance	(Km)	9.8	10.8	12.0	9.6
	(N Mi)	5.3	5.9	6.5	5.2
Direction (Deg.True)		144	239	257	185
Bottom Depth	(m)	159- 168	269- 229	205- 243	187- 190
	(Fm)	87- 92	147- 125	112- 133	102- 104
Modal Depth	(m)	165	283	229	183
Net/Gear Depth	(m)	108- 110	..- ..	..- ..	..- ..
	(Fm)	59- 60	..- ..	..- ..	..- ..
Modal Net Depth	(m)	110	..	..	..
Footrope-Bottom	(m)	18- 18	0- 0	0- 0	0- 0
Distance	(Fm)	10- 10	0- 0	0- 0	0- 0
Modal Distance	(m)	18	0	0	0
Gear Type		MW	BT	BT	BT
Tide		FLOOD	FLOOD	EBB	SLACK
Total Catch	(Kg)	6804	3629	2722	2268
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	17	18	19	20
Date	JUL 19	JUL 19	JUL 19	JUL 19
Area (Major, Minor)	3C,25	3C,23	3C,23	3C,21
Arrowtooth flounder	..	113	72	154
Dover sole	..	21	57	136
English sole	..	..	..	87
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	..	62	57	118
Slender sole	..	..	..	19
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	..	..
S. alutus	..	1996	1416	440
S. babcocki	..	21	79	..
S. borealis	..	..	..	..
S. brevispinis	..	..	..	31
S. crameri	..	185	..	..
S. diploproa	..	779	352	..
S. elongatus	..	..	29	167
S. entomelas	4871	..	..	6
S. flavidus	1933	..	..	..
S. helvomaculatus	..	21	36	68
S. paucispinis	..	..	..	..
S. pinniger	..	..	..	..
S. proriger	..	..	..	192
S. reedi	..	..	..	647
S. variegatus	..	..	..	..
S. zacentrus	..	10	136	74
Sebastolobus alascanus	..	82	158	..
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	..
Pacific cod	..	..	29	49
Pacific hake	..	41	..	12
Prowfish	..	..	..	..
Sablefish	..	236	215	31
Walleye pollock	..	21	36	..
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	41	..	31
Spiny dogfish	..	..	50	6
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	6804	3629	2722	2268

Appendix Table 2 (cont'd)

Haul No.		21	22	23	24
Date		JUL 19	JUL 20	JUL 26	JUL 26
Area (Major, Minor)		3C,21	3C,21	5E,35	5E,35
Start Time	(PDT)	22:25	1:35	7:40	10:15
Duration	(Min)	165	95	60	125
Start N. Lat.	(Deg)	48	48	54	54
	(Min)	15.5	20.1	5.3	9.7
W. Long	(Deg)	125	125	133	133
	(Min)	46.6	51.2	42.9	45.3
Start LORAN-C	X	14692.1	14673.7	11414.5	11387.4
	Y	28904.5	28945.1	30466.7	30474.2
Finish N. Lat.	(Deg)	48	48	54	54
	(Min)	20.1	17.9	2.6	16.1
W. Long	(Deg)	125	125	133	133
	(Min)	51.1	50.9	40.7	49.7
Finish LORAN-C	X	14673.9	14675.5	11432.1	11348.8
	Y	28945.0	28929.3	30462.3	30484.4
Haul Distance	(Km)	10.2	4.1	5.6	12.8
	(N Mi)	5.5	2.2	3.0	6.9
Direction (Deg.True)		278	214	169	297
Bottom Depth	(m)	201- 183	198- 201	318- 327	263- 260
	(Fm)	110- 100	108- 110	174- 179	144- 142
Modal Depth	(m)	192	199	338	262
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		EBB	EBB	SLACK	EBB
Total Catch	(Kg)	9072	2268	9072	6804
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	21	22	23	24
Date	JUL 19	JUL 20	JUL 26	JUL 26
Area (Major, Minor)	3C,21	3C,21	5E,35	5E,35
Arrowtooth flounder	536	113	132	..
Dover sole	382	..	..	..
English sole	38	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	45
Rex sole	153	..	..	..
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	7115	..
S. alutus	4249	680	1746	6088
S. babcocki	77	..	..	80
S. borealis	..	..	..	..
S. brevispinis	..	..	..	45
S. crameri	..	..	..	..
S. diploproa	..	454	..	..
S. elongatus	421	..	..	..
S. entomelas	..	..	..	..
S. flavidus	..	..	..	..
S. helvomaculatus	..	..	..	..
S. paucispinis	..	..	..	..
S. pinniger	..	..	..	..
S. proriger	115	..	..	..
S. reedi	1340	908	..	..
S. variegatus	..	..	..	..
S. zacentrus	421	..	..	381
Sebastolobus alascanus	268	..	79	120
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	45
Pacific cod	..	..	..	..
Pacific hake	230	..	..	..
Prowfish	..	..	..	..
Sablefish	689	113	..	..
Walleye pollock	..	..	..	..
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	9072	2268	9072	6804

Appendix Table 2 (cont'd)

Haul No.		25	26	27	28
Date		JUL 26	JUL 26	JUL 26	JUL 27
Area (Major, Minor)		5E,35	5E,35	5E,35	5E,35
Start Time	(PDT)	12:47	15:50	20:15	8:27
Duration	(Min)	110	180	110	109
Start N. Lat.	(Deg)	54	54	54	53
	(Min)	17.2	22.2	9.3	24.3
W. Long	(Deg)	133	133	133	133
	(Min)	49.7	51.6	45.8	9.6
Start LORAN-C	X	11342.8	11315.1	11389.2	11712.8
	Y	30486.5	30495.0	30473.2	30394.6
Finish N. Lat.	(Deg)	54	54	54	53
	(Min)	22.7	12.9	13.9	19.5
W. Long	(Deg)	133	133	133	133
	(Min)	51.0	48.9	50.2	4.3
Finish LORAN-C	X	11312.8	11366.8	11360.3	11753.9
	Y	30496.3	30478.7	30479.0	30385.0
Haul Distance	(Km)	10.4	17.4	9.8	10.7
	(N Mi)	5.6	9.4	5.3	5.8
Direction (Deg.True)		357	202	313	171
Bottom Depth	(m)	238- 271	252- 263	302- 338	219- 227
	(Fm)	130- 148	138- 144	165- 185	120- 124
Modal Depth	(m)	238	256	311	223
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		EBB	FLOOD	SLACK	FLOOD
Total Catch	(Kg)	2722	7257	4990	14515
Remarks		SNAG-USE	SNAG-USE	SNAG-USE	USABLE

Appendix Table 2 (cont'd)

Haul No.	25	26	27	28
Date	JUL 26	JUL 26	JUL 26	JUL 27
Area (Major, Minor)	5E,35	5E,35	5E,35	5E,35
Arrowtooth flounder	40	23	80	84
Dover sole	..	..	133	..
English sole	..	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	..	..	..	..
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	68	240	..
S. alutus	1017	5854	3351	755
S. babcocki	..	90	27	..
S. borealis	..	..	506	..
S. brevispinis	202	113	..	336
S. crameri	..	..	27	..
S. diploproa	..	..	..	..
S. elongatus	..	..	..	..
S. entomelas	..	23	..	252
S. flavidus	..	..	..	..
S. helvomaculatus	..	..	27	84
S. paucispinis	..	..	..	..
S. pinniger	..	..	..	..
S. proriger	16	23	..	2727
S. reedi	8	68	..	10235
S. variegatus	145	..	..	..
S. zacentrus	1197	972	386	..
Sebastolobus alascanus	40	23	200	42
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	..
Pacific cod	57	..	..	..
Pacific hake	..	..	..	..
Prowfish	..	..	..	..
Sablefish	..	..	..	..
Walleye pollock	..	..	..	..
Other Roundfish	..	..	13	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	2722	7257	4990	14515

Appendix Table 2 (cont'd)

Haul No.		29	30	31	32
Date		JUL 27	JUL 27	JUL 27	JUL 28
Area (Major, Minor)		5E,31	5E,31	5E,31	5E,34
Start Time	(PDT)	12:37	16:05	19:32	10:45
Duration	(Min)	167	163	218	70
Start N. Lat.	(Deg)	53	53	53	52
	(Min)	18.2	25.7	16.9	2.0
W. Long	(Deg)	133	133	133	131
	(Min)	2.9	10.7	2.7	20.3
Start LORAN-C	X	11765.1	11701.8	11773.8	12553.4
	Y	30383.6	30397.4	30380.6	30219.9
Finish N. Lat.	(Deg)	53	53	53	51
	(Min)	25.4	17.9	26.1	59.1
W. Long	(Deg)	133	133	133	131
	(Min)	10.5	5.4	11.0	16.3
Finish LORAN-C	X	11704.1	11761.8	11698.7	12585.5
	Y	30396.8	30381.6	30398.1	30212.2
Haul Distance	(Km)	15.7	15.6	19.4	7.0
	(N Mi)	8.5	8.4	10.5	3.8
Direction (Deg.True)		245	170	273	142
Bottom Depth	(m)	280- 276	300- 280	254- 265	241- 293
	(Fm)	153- 151	164- 153	139- 145	132- 160
Modal Depth	(m)	278	309	260	256
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		EBB	EBB	FLOOD	EBB
Total Catch	(Kg)	5897	12247	6804	6804
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	29	30	31	32
Date	JUL 27	JUL 27	JUL 27	JUL 28
Area (Major, Minor)	5E,31	5E,31	5E,31	5E,34
Arrowtooth flounder	..	..	..	..
Dover sole	..	..	..	..
English sole	..	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	..	..	..	..
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	233	136	..
S. alutus	4415	11432	5784	5630
S. babcocki	16	78	..	78
S. borealis	..	..	136	..
S. brevispinis	65	..	340	98
S. crameri	..	..	..	..
S. diploproa	..	..	..	..
S. elongatus	..	..	..	..
S. entomelas	..	..	..	20
S. flavidus	..	..	..	..
S. helvomaculatus	98	..	68	20
S. paucispinis	81	..	..	..
S. pinniger	..	..	..	..
S. proriger	98	..	..	156
S. reedi	782	..	..	156
S. variegatus	..	..	..	..
S. zacentrus	..	..	..	411
Sebastolobus alascanus	114	504	..	117
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	..
Pacific cod	..	..	..	..
Pacific hake	..	..	..	..
Prowfish	81	..	..	..
Sablefish	147	..	340	98
Walleye pollock	..	..	..	20
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	5897	12247	6804	6804

Appendix Table 2 (cont'd)

Haul No.		33	34	35	36
Date		JUL 28	JUL 28	JUL 28	JUL 28
Area (Major, Minor)		5E,34	5C,02	5C,02	5C,02
Start Time	(PDT)	12:28	19:02	20:15	23:07
Duration	(Min)	96	48	145	80
Start N. Lat.	(Deg)	51	52	52	52
	(Min)	59.3	17.7	20.9	20.8
W. Long	(Deg)	131	130	130	130
	(Min)	16.2	23.2	23.7	22.6
Start LORAN-C	X	12584.8	12690.9	12668.8	12674.2
	Y	30212.9	30302.6	30312.8	30313.2
Finish N. Lat.	(Deg)	52	52	52	52
	(Min)	2.9	20.7	20.4	25.1
W. Long	(Deg)	131	130	130	130
	(Min)	21.6	23.6	23.0	22.4
Finish LORAN-C	X	12543.2	12670.5	12674.0	12648.1
	Y	30222.3	30312.2	30311.6	30327.2
Haul Distance	(Km)	9.1	5.6	13.0	8.0
	(N Mi)	4.9	3.0	6.6	4.3
Direction (Deg.True)		334	24	150	353
Bottom Depth	(m)	327- 371	227- 245	248- 245	290- 274
	(Fm)	179- 203	124- 134	136- 134	159- 150
Modal Depth	(m)	320	219	241	282
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	..- ..
	(Fm)	..- ..	..- ..	..- ..	..- ..
Modal Net Depth	(m)	..	..	..	..
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	0- 0
Distance	(Fm)	0- 0	0- 0	0- 0	0- 0
Modal Distance	(m)	0	0	0	0
Gear Type		BT	BT	BT	BT
Tide		FLOOD	FLOOD	FLOOD	EBB
Total Catch	(Kg)	3175	2268	9979	1814
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	33	34	35	36
Date	JUL 28	JUL 28	JUL 28	JUL 28
Area (Major, Minor)	5E,34	5C,02	5C,02	5C,02
Arrowtooth flounder	29	416	70	107
Dover sole	..	7	70	78
English sole	..	..	..	..
Flathead sole	..	..	..	..
Pacific halibut	..	..	..	..
Rex sole	..	7	..	44
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	153	..	..	29
S. alutus	2485	676	8481	1032
S. babcocki	115	..	70	..
S. borealis	38	..	..	..
S. brevispinis	19	902	730	..
S. crameri	..	..	..	..
S. diploproa	..	..	..	..
S. elongatus	..	..	..	..
S. entomelas	..	..	..	..
S. flavidus	..	..	..	..
S. helvomaculatus	38	..	..	5
S. paucispinis	..	42	..	..
S. pinniger	..	..	..	..
S. proriger	29	..	..	..
S. reedi	..	35	..	..
S. variegatus	..	..	..	..
S. zacentrus	77	106	313	..
Sebastolobus alascanus	163	42	70	189
Other Rockfish	..	..	..	..
Eulachon	..	..	..	..
Lingcod	..	..	..	..
Pacific cod	..	21	35	..
Pacific hake	..	..	..	5
Prowfish	..	..	..	..
Sablefish	..	7	70	296
Walleye pollock	29	7	70	29
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	..	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	3175	2268	9979	1814

Appendix Table 2 (cont'd)

Haul No.		37	38	39	40
Date		JUL 29	JUL 29	JUL 29	JUL 29
Area (Major, Minor)		5B,08	5B,08	5B,08	5B,08
Start Time	(PDT)	8:56	12:04	16:00	19:30
Duration	(Min)	131	148	135	190
Start N. Lat.	(Deg)	51	51	51	51
	(Min)	25.3	27.4	17.4	22.1
W. Long	(Deg)	129	128	129	129
	(Min)	1.4	39.5	6.6	22.4
Start LORAN-C	X	13366.9	13467.7	13378.8	13279.9
	Y	30150.0	30172.5	30113.5	30126.6
Finish N. Lat.	(Deg)	51	51	51	51
	(Min)	26.3	23.5	17.2	25.1
W. Long	(Deg)	128	128	129	129
	(Min)	49.1	51.9	19.7	7.4
Finish LORAN-C	X	13423.9	13423.1	13316.3	13338.2
	Y	30162.1	30148.1	30106.6	30146.0
Haul Distance	(Km)	14.4	16.1	15.2	18.3
	(N Mi)	7.8	8.7	8.2	9.9
Direction (Deg.True)		84	154	255	89
Bottom Depth	(m)	165- 177	203- 219	262- 282	143- 124
	(Fm)	90- 97	111- 120	143- 154	78- 68
Modal Depth	(m)	165	219	274	134
Net/Gear Depth	(m)	..- ..	..- ..	..- ..	80- 80
	(Fm)	..- ..	..- ..	..- ..	44- 44
Modal Net Depth	(m)	..	..	..	80
Footrope-Bottom	(m)	0- 0	0- 0	0- 0	33- 33
Distance	(Fm)	0- 0	0- 0	0- 0	18- 18
Modal Distance	(m)	0	0	0	33
Gear Type		BT	BT	BT	MW
Tide		FLOOD	SLACK	EBB	FLOOD
Total Catch	(Kg)	2268	5897	1814	20412
Remarks		USABLE	USABLE	USABLE	USABLE

Appendix Table 2 (cont'd)

Haul No.	37	38	39	40
Date	JUL 29	JUL 29	JUL 29	JUL 29
Area (Major, Minor)	5B,08	5B,08	5B,08	5B,08
Arrowtooth flounder	180	702	32	..
Dover sole	84	737	19	..
English sole	..	..	..	..
Flathead sole	18	35	..	..
Pacific halibut	..	..	..	..
Rex sole	30	140	13	..
Slender sole	..	..	..	..
Other Flatfish	..	..	..	..
Sebastes aleutianus	..	..	45	..
S. alutus	1043	3248	1365	..
S. babcocki	295	298	45	..
S. borealis	..	..	13	..
S. brevispinis	114	105	..	..
S. crameri	..	..	..	..
S. diploproa	..	..	..	..
S. elongatus	..	..	..	..
S. entomelas	66	..	..	10983
S. flavidus	..	..	..	9085
S. helvomaculatus	..	..	..	..
S. paucispinis	132	..	26	115
S. pinniger	..	..	..	..
S. proriger	12	..	..	57
S. reedi	..	..	..	..
S. variegatus	..	..	..	..
S. zacentrus	..	..	..	..
Sebastolobus alascanus	72	193	51	..
Other Rockfish	..	..	..	..
Eulachon	18	..	..	..
Lingcod	..	..	..	..
Pacific cod	..	..	6	..
Pacific hake	60	..	..	115
Prowfish	..	..	..	..
Sablefish	84	439	199	..
Walleye pollock	54	..	..	57
Other Roundfish	..	..	..	..
Longnose skate	..	..	..	..
Ratfish	..	..	..	..
Spiny dogfish	6	..	..	..
Starry skate	..	..	..	..
Other Selachii	..	..	..	..
Squid	..	..	..	..
Other Invertebrates	..	..	..	..
Total Catch (Kg)	2268	5897	1814	20412

Appendix Table 3. Description of rockfish gonad maturity stages.

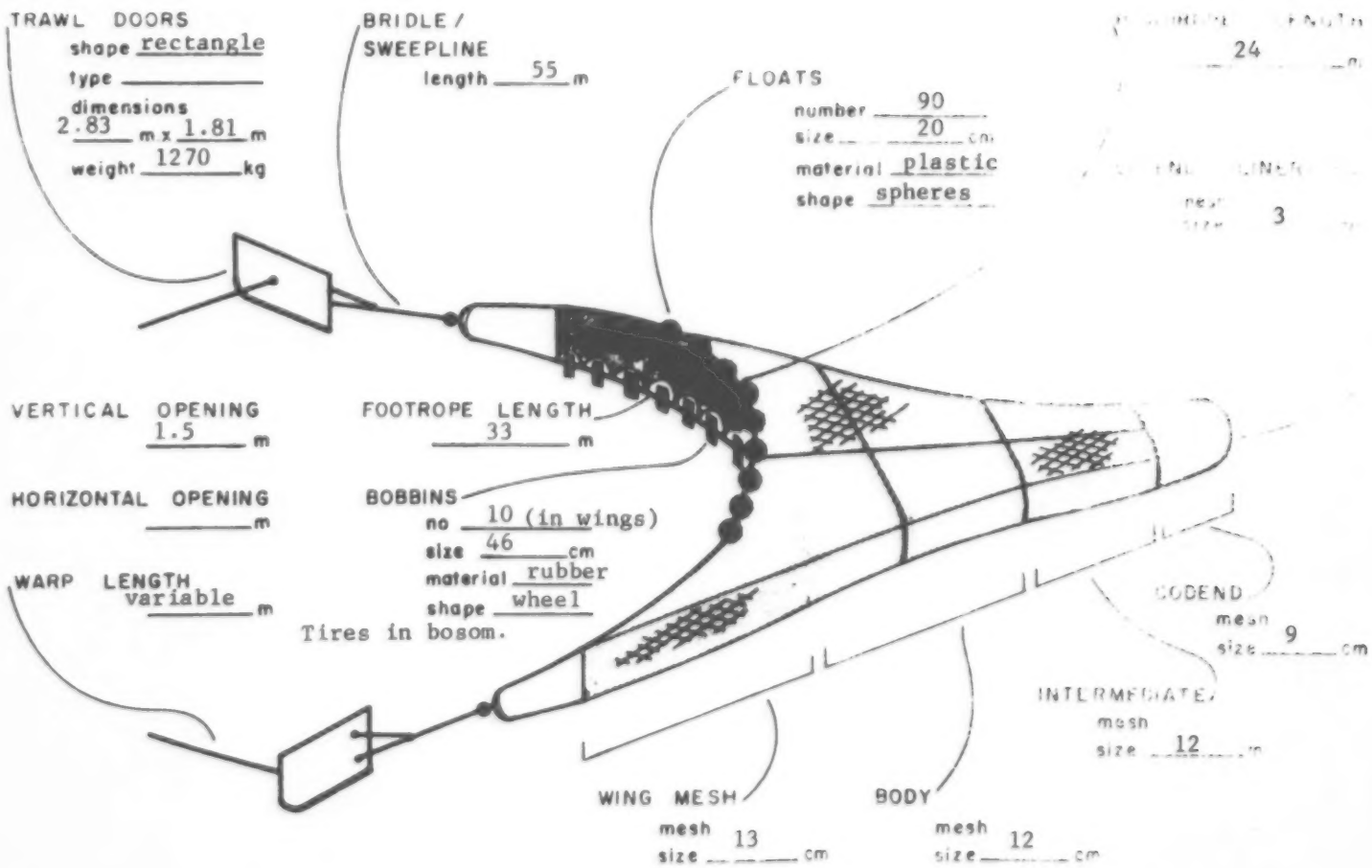
Code		Gonad condition
Females:	1	Immature (translucent, small)
	2	Developing (small yellow eggs, translucent or opaque)
	3	Developed (large yellow eggs, opaque)
	4	Fertilized (large orange-yellow eggs, translucent)
	5	Embryos or larvae (includes eyed eggs)
	6	Spent (large flaccid red ovaries, a few larvae may be present)
	7	Resting (moderate size, firm, red-grey ovaries)
Males:	1	Immature (translucent, string-like)
	2	Developing (swelling, brown-white)
	4	Developed (large, white; easily broken)
	5	Ripe (running sperm)
	6	Spent (flaccid, red)
	7	Resting (ribbon-like, small, brown)

Appendix Figure 1.

NET DIMENSIONS AND CHARACTERISTICS FOR BOTTOM TRAWL

VESSEL OCEAN SELECTOR NET Western IIA

OBSERVATION PERIOD July 12-30, 1989



4.

Appendix Figure 2.

NET DIMENSIONS AND CHARACTERISTICS OF A TRAWL

VESSEL NAME OCEAN SELECTOR VESSEL TYPE Trawler July 12-30, 1989

TRAWL DOORS

Shape rectangle

Type _____

Dimensions 2.83 m x 1.81 m

Weight 1270 kg.

SWEEPLINE / DANDYLINE

Length 91 m.

FLOATS

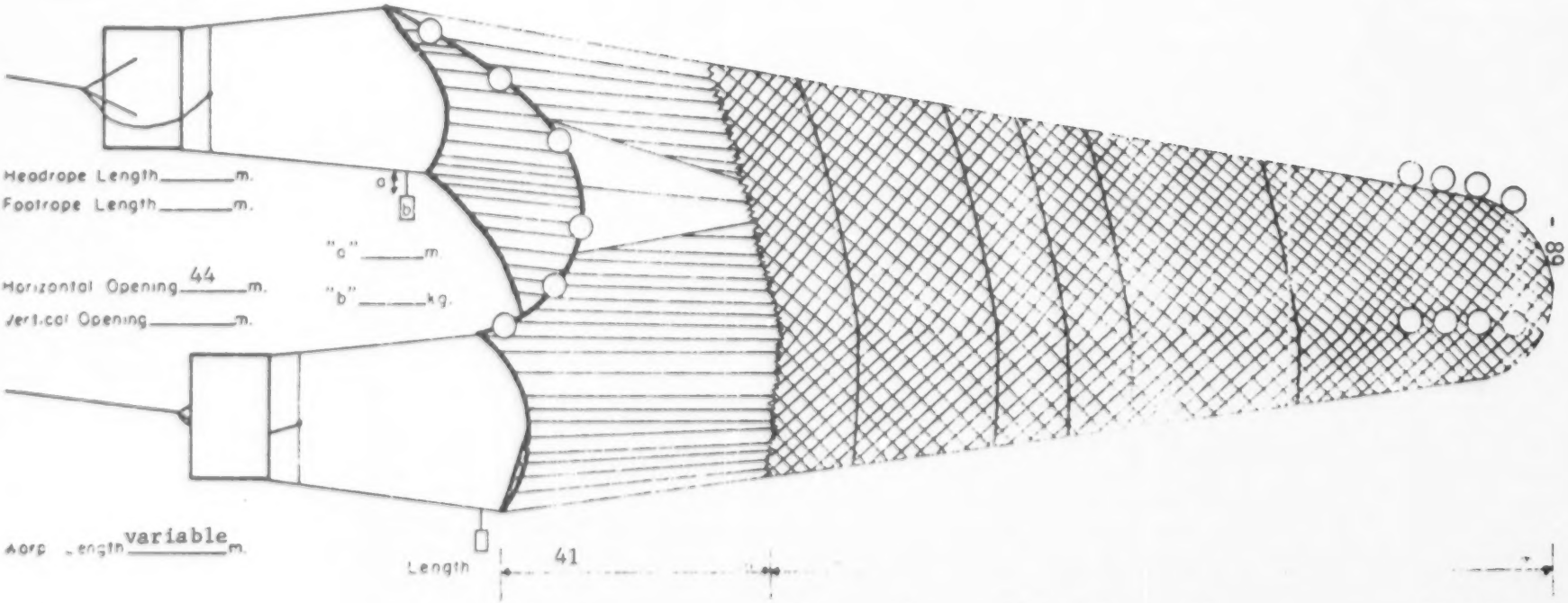
Number _____

Size _____

Shape _____

Material _____

_____ kg



Headrope Length _____ m.

Footrope Length _____ m.

"a" _____ m.

Horizontal Opening 44 m.

"b" _____ kg.

Vertical Opening _____ m.

Warp Length variable m.

Length

MESH SIZE _____ m.

WINGS

(mesh or line)

Mesh Size _____ cm.

Line Spacing _____ cm.

Line Thickness _____ cm.

Material _____

Height of Wings _____ m.

Mesh Material

_____

SODEN

(floats or weights)

Number _____

Size _____

Weight _____

Material _____

Polish rope trawl No. 7